

PUBLIC ROADS

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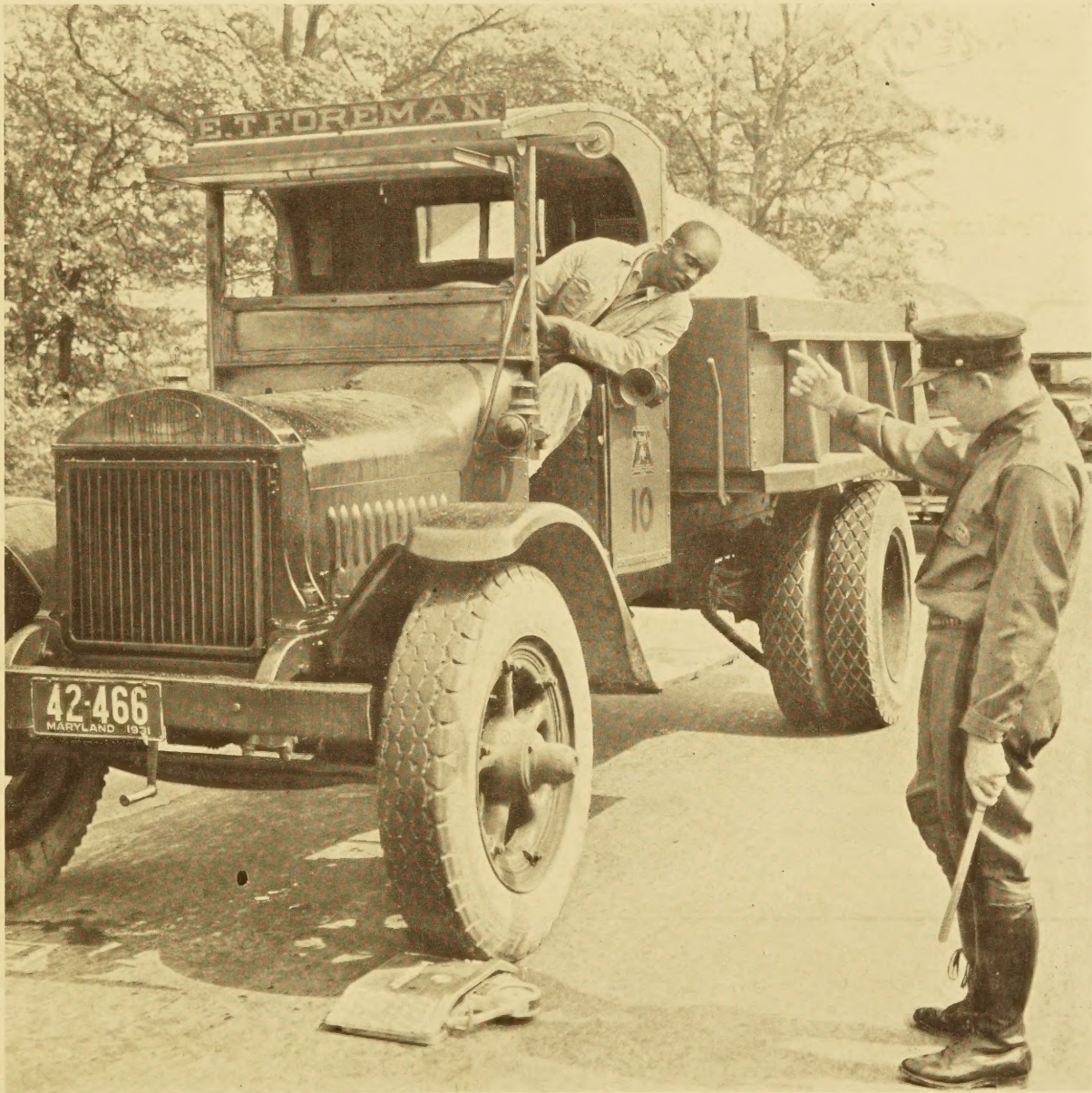
UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS



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LOAD RESTRICTIONS ARE ENFORCED BY STATE PATROL

PUBLIC ROADS

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BUREAU OF PUBLIC ROADS

G. P. St. CLAIR, *Editor*

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The reports of research published in this magazine are necessarily qualified by the conditions of the tests from which the data are obtained. Whenever it is deemed possible to do so, generalizations are drawn from the results of the tests; and, unless this is done, the conclusions formulated must be considered as specifically pertinent only to the described conditions.

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THE PROBLEM OF MOTOR VEHICLE REGULATION

WITH SPECIAL ATTENTION TO THE MOVEMENT OF HIGHWAY TRAFFIC ACROSS STATE LINES

Reported by H. H. KELLY, Division of Highway Transport, United States Bureau of Public Roads

A COMPLETE highway map of the United States would show a close-knit web of lines touching every part of the Nation, and representing 3,000,000 miles of road.

Moving back and forth on this vast network today are 26,000,000 motor vehicles.

Across this busy picture of modern communication lie the invisible, yet very real, boundaries of the 48 States of the Union.

Here is the essence of the American problem of motor vehicle regulation. The motor vehicle, mechanically capable of moving anywhere on the highway system of the entire nation, is subject to the diverse control of 48 different States. Although the vehicles themselves have become standardized to a large extent under mass-production methods of manufacture, and the highways over which they operate are steadily approaching a uniform standard of excellence, the laws regulating their operation are still characterized by nonuniformity.

The purpose of the present paper is to consider this whole question of motor-vehicle regulation in the United States, and to reduce its intimidating complexity to a manageable set of individual elements. Such an analysis is the first step toward comprehension of the general problem, and an essential preliminary to consideration of possible means of rationalization and standardization in the future.

GENERAL BACKGROUND

There are several reasons why the matter under discussion is a puzzling one. In the first place, it has arisen to the importance of a pressing national problem in less than a single generation, and past experience with other forms of wheeled traffic offers little or no guidance in handling it. Again, its size renders it difficult—only figures in millions or billions seem adequate to express it statistically—through the number of operating units involved, the multitude of owners and operators directly interested, the great extent of territory covered, the stupendous sums represented annually by receipts from vehicles and expenditures on highways. Finally, it contains many conflicting elements—the need for public safety and protection as

ABSTRACT

The operation of 26,000,000 motor vehicles in the United States is subject to the diverse regulations of 48 States and the District of Columbia.

The problem of control is complicated by the large number and great variety of motor vehicles, their frequent operation outside the State of registration, and the many forms which regulation takes.

Analysis of the elements of regulation applicable to vehicles in general shows wide divergencies among the several States, particularly in regard to physical and business characteristics of vehicles, and taxation.

Even greater lack of uniformity exists in the regulation of for-hire vehicles, which presents one of the most difficult phases of the problem under discussion.

One result of this non-uniformity has been a considerable volume of court litigation, and the Supreme Court has recently handed down two decisions of basic importance in upholding new laws of Texas and Kansas.

A second result of the existing situation has been a movement toward greater standardization and rationalization of motor vehicle regulations on the part of important groups, including national and State officials, safety experts, engineers, economists, business men, and others.

The outlook for the immediate future is for further legislative action, with 43 State legislatures scheduled to meet in 1933, and with bills under consideration in both houses of the United States Congress.

Most of the elements of the problem of regulation lie within the exclusive jurisdiction of the individual States, and the goal of greater uniformity can be attained only through appropriate State action.

Regulation of interstate for-hire vehicles, and fixing of national standards for size, weight, and equipment of such vehicles, have been suggested as a proper activity of the Federal government, but measures to this end proposed thus far appear to be largely of an experimental character.

The vital need at present is for more factual data as a basis for wise legislation. Special study by each State of its own regulatory problems, and consultation with neighboring States, would seem to offer the most fruitful field for immediate State action.

Intelligent collaboration of engineers, economists, business men, safety experts, and officials of government will provide the ultimate solution to the problem of motor vehicle regulation.

opposed to the natural liberty of movement of the motor vehicle (all the more difficult to reconcile in a nation where one out of every five persons is an automobile owner, and where practically everyone is constantly or occasionally a highway user); the interest of the private-passenger automobile owner as contrasted to the interests of the commercial vehicle owner; the diverse points of view of the various kinds of commercial operators; the competitive position of other forms of transport.

Only one or two illustrations of these conflicting interests need be given.

There are more than 26,000,000 motor vehicles operating in the United States this year, but five out of every six of them are passenger cars, privately owned and operated. The balance of highway-user power now rests with the private passenger-carrying vehicle, and the needs and desires of its myriad owners have both dictated in large part the present regulatory system and have been the chief influence in the improvement of the highways of the country. The utility vehicle, the

truck, has consequently taken second place in the public mind, although it is undoubtedly a more vital factor in the economic welfare of the Nation to-day than ever before. The average man, in fact, has been all too willing to condemn the truck on no more rational grounds than that it "takes up too much space on the highway," ignoring the material benefits which that same truck has conferred upon him in improved service and reduced costs of distribution.

Had motor transportation and rail transportation developed simultaneously, each would likely have filled its proper place in the economic structure with little friction, but the railroad was more than half a century ahead of the motor vehicle, and the latter has had to forge its way into an established transportation system. Thus, it has not been possible to treat the newcomer as a distinctly separate entity, desirable as that might have been from a purely economic standpoint, but, rather, it has been subject—and this is true in most modern countries, as well as in the United States—to considerations growing out of the existence of the older means of transportation. The issue is further complicated by

the fact that the railroads form part of the banking and investment structure of the Nation, which has entitled to consideration as repositories of the public wealth, rather than simply as transportation agencies subject to free competition.

Add to these conflicting elements, which are inherent in as flexible and extensive an organism as motor transport, the fact that legislative control is vested in the individual States, and the complicated situation existing to-day is seen to be only an inevitable result. Perhaps one way out of the dilemma, in the beginning, might have been the assumption of unified control over motor vehicles by the Federal Government, a policy which has simplified this matter in many foreign countries. Yet, under our system of government, with police powers reserved to the several States by the tenth amendment to the Constitution, such a plan was not considered, and to-day the problem is so large that a single nation-wide control over all vehicles is clearly impracticable.

POINT OF VIEW

The point of view of the present discussion of motor-vehicle regulation is a dual one, considering the individual State (1) as a sovereign Commonwealth and the proper source of most if not all regulatory legislation, and (2) as a member of the Federal Union of 48 States and the District of Columbia. This approach to the subject will entail a study of the situation now resulting from the efforts of the several States to regulate motor traffic, and some indication of what may be done to effect greater uniformity of regulation and greater freedom of movement of vehicles across State lines than now exists.

There is ample justification for this objective of uniformity and freedom of movement. A very large volume of traffic already exists across wide areas of the United States, regardless of State lines, and that this is worthy of encouragement is hardly disputable; this traffic, certainly as regards passenger cars, and in many portions of the country as regards trucks also, tends to balance between the individual States, so that the citizens of one State quickly receive proportionate benefits from liberality and uniformity in their own laws through increased liberality of treatment in the States which they visit. Moreover, the Nation as a whole has a vested interest in its highways everywhere, as witness the large expenditures made on Federal-aid roads under a policy of the National Government first adopted in 1916 and continued ever since. In this Federal-aid highway system are now included more than 200,000 miles of important roads. The major purpose of this system is indicated by the Federal-aid highway act of 1921 as being "the completion of an adequate and connected system of highways interstate in character." Recognition of the importance to the entire Nation of interstate commerce is contained in the Constitution itself, which provides that Congress shall have the power to "regulate commerce with foreign nations and among the several States * * *".¹

STATISTICAL DATA

It will be helpful to glance at some figures which show both the magnitude of the problem under discussion and the complications lent to it by the numerous classes of motor vehicles.

Official reports of the United States Bureau of Public Roads give registration figures at the end of 1931 as follows: Passenger automobiles, taxicabs, and busses,

22,347,800; motor trucks and road tractors, 3,466,303; trailers, 349,930.

To segregate these totals into the individual classes of vehicles desired, the best figures available, taken from various sources,² have been used to compile the data given in Table 1.

TABLE 1.—Registrations of motor vehicles in the United States at the end of 1931, classified according to use

Type of vehicle	Number registered	Percentage of total registrations
Passenger automobiles, privately owned and operated	22,125,860	84.5
Taxicabs	140,000	.6
Busses—		
School busses	48,500	
Motor carrier busses	31,850	
Other revenue busses (electric railway, steam railroad, and sightseeing busses)	16,550	
Nonrevenue busses (hotel, industrial, and others)	2,000	
Total	98,900	.4
Trucks (including tractor trucks)	1 3,449,343	13.2
Trailers	349,930	1.3
Total all vehicles	26,164,033	100.0

¹ Separate figures for the three principal classes of trucks, privately owned and operated, common carrier, and contract carrier, are not available. A survey of traffic in 11 Western States indicated the proportion of common-carrier and contract-carrier trucks to all trucks to be 5.5 per cent and 8.7 per cent, respectively. These data were based on observations of traffic on rural roads rather than upon registrations. As a matter of fact all available data point to a more intense use of for-hire trucks than of private trucks and, therefore, the actual percentages of registrations of the former are certainly less than the percentages of traffic. Since the number and character of for-hire operators depend in part upon the nature of regulatory legislation in the individual State, these proportions are hardly applicable to the country as a whole, and it seems likely that the true ratio of contract-carrier to common-carrier trucks is considerably larger than the above figures indicate.

There emerge at once from the above tabulation two salient facts. Motor transportation is predominantly private in character, and differs thereby from any other form of modern communication. It is also individualistic and personal, for the more than 22,000,000 passenger cars are owned by almost as many individuals, and the National Automobile Chamber of Commerce estimates that of the 2,500,000 owners of trucks, 2,200,000 possess only one truck each.

These millions of vehicles do not remain always within the boundaries of the respective States in which they are registered. If they did, the question of regulating them would be much simpler than is actually the case. Instead, it is probable that most, if not all, of the passenger automobiles engage frequently in interstate trips, and great numbers of them in certain sections of the country must regularly cross State lines in their normal operations. A large proportion of the busses are used on interstate routes; as for the taxicabs, they do not as a rule figure in interstate operation. All this natural pressure toward interstate movement on the part of passenger-carrying vehicles, with mileage figures of large proportions, has led to fairly liberal regulations in most States, so that a private automobile to-day can travel freely in most parts of the country for at least limited periods of time without legal difficulties. The bus, being peculiarly susceptible of control by public regulatory bodies, also operates widely under the various State jurisdictions.

No one knows exactly what proportion of the trucks perform interstate service, although it is probably less

² Basis of estimates as follows: (1) Passenger automobiles privately owned and operated, United States Bureau of Public Roads statistics of "passenger automobiles, taxicabs, and busses," with estimated taxicabs and busses deducted; (2) taxicabs, from *Transit Journal*, January, 1932; (3) busses, from *Bus Facts* for 1932, published by the National Association of Motor Bus Operators; (4) trucks, United States Bureau of Public Roads statistics of motor trucks and road tractors, adjusted to account for busses included with trucks. Seven States register busses with motor trucks, the number of such busses having been estimated in *Bus Facts* for 1932 as 16,960; this number, accordingly, has been deducted from total truck registrations and added to the total shown as "passenger automobiles, taxicabs, and busses" before segregation. Motor cycles, 101,074 of which were registered at the end of 1931, have been excluded from this table as being a minor element in the problem under discussion.

¹ United States Constitution, Article I, section 8.

than in the case of passenger cars. The fact that farmers use 26 per cent³ of all trucks indicates that this percentage, at least, is probably used chiefly in local farm-to-market hauling. Much private hauling, as in delivery service, is also done within a limited radius.

These assumptions are borne out by a statistical analysis of truck traffic made this year by the Bureau of Public Roads. This analysis was based on data obtained in exhaustive surveys of traffic in the following States, conducted by the bureau in cooperation with the State authorities: Connecticut (1922-23), Maine (1924), Pennsylvania (1924), Ohio (1925), Vermont (1926), New Hampshire (1926), and 11 Western States—Arizona, California, Colorado, Idaho, Nebraska, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming (1930-31). A study of these sources, combined with the results of an investigation of motor-truck freight transportation in 41 States and the District of Columbia, conducted in 1931 by the Bureau of Public Roads and the Department of Commerce, produced the following distribution of truck traffic:

	Per cent
Privately owned and operated.....	85.8
Interstate.....	2.6
Intrastate.....	83.2
Operated for hire.....	14.2
Interstate.....	4.4
Intrastate.....	9.8
All truck traffic.....	100

ELEMENTS OF PROBLEM AND EXISTING SITUATION

Having sketched in a background of basic data, and shown how the numerous kinds of motor vehicles and their movement across State lines create the first complications in our problem, we are ready to consider in detail the most important difficulty of all—that of the many forms of regulation of these vehicles.

The word "regulation" will be used in this article as a convenient term to cover all phases of vehicle control. At first glance, there may appear to be certain main groups of regulatory methods which are distinct from each other—for instance, highway protection measures, public safety measures, and business control or taxation—but upon closer inspection these are seen to be so closely interrelated that any attempt to group them in this manner only adds to the confusion. Thus, the size and weight of a vehicle may be controlled for protection of the highway pavement and bridges, but these characteristics also involve the question of public safety, and at the same time provide a basis for taxation. If, therefore, all the diverse yet interrelated forms of control be regarded simply as individual parts of a general problem of regulation, the task of analysis may be materially simplified.

The following is an attempt to set down in orderly fashion all the phases of this complex problem.

1. Forms of control applicable to motor vehicles in general:

- Registration (license plates).
- Antitheft protection (certificate of title).
- Operators' and chauffeurs' licenses.
- Public liability (financial responsibility).
- Regulation of traffic on the highway.
- Physical characteristics of vehicles—
 - Limitations on size and weight.
 - Equipment.

- Business characteristics of vehicles—
 - Privately owned and operated.
 - For hire.
- Taxation.
- Privileges of interstate operation (reciprocity).
- Enforcement.

2. Additional forms of control applicable to for-hire vehicles:

- Rates, practices, and service.
- Certificates of convenience and necessity for common-carrier operations.
- Hours of labor of truck and bus drivers.
- Insurance or other special financial responsibility.

To answer completely the question of what each State has enacted in the way of specific legislation on these topics would require a volume in itself. At best, there can be indicated here only some examples of the diversified statutes passed by State legislatures and now in effect.

CONTROL OF MOTOR VEHICLES IN GENERAL

Registration.—To begin with, let us visualize a new vehicle arriving from the factory—passenger car or truck or bus. It is delivered to its owner and the problem of control begins. The first thing to be done is to give it an official identity, which means registration; and to perform that job, an administrative organization is necessary. All States now have some form of registration law, and all States issue identifying license plates to vehicle owners. Beyond that, however, there is little uniformity. For example, the National Conference on Street and Highway Safety has found that the office of commissioner or registrar of motor vehicles exists at present in only 19 States; that the secretary of state performs the duties of registrar in 14 States; that the department of public works or State highway commission registers vehicles in eight States; and that in other States these duties are delegated to such widely diverse bodies as State auditors, State tax commissions, or others, and in one State even to the warden of the State penitentiary.⁴ Most States require two license plates on each automobile, but some—Alabama, Florida, Mississippi, Oklahoma, for instance—require only one.⁵ The period of registration is customarily for one year, but does not always coincide with the calendar year; shorter periods of registration are sometimes permitted at reduced rates. There are numerous other inconsistencies in the State laws on these and similar points, but they may be regarded as of minor importance.

Protection against theft.—Linked closely with the question of registration is that of a proper certificate of title and adequate antitheft protection. Here we encounter the first major divergence among the several States. As yet, only 22 States and the District of Columbia have some form of certificate of title law, but 31 States and the District of Columbia maintain a "stolen car" department, or special files which make possible effective action in cases of theft.

Operator's license.—Once the vehicle itself has been identified and licensed, the driver or operator who will set it in motion on the public highway enters the picture.

⁴ Uniform Vehicle Code, the Basis for Nation-Wide Uniformity in State Motor Vehicle Laws, published by the National Conference on Street and Highway Safety, Washington, D. C., 1932.

⁵ Much of the legislative data hereinafter cited is from a Digest of Regulations Governing the Operation of Motor Vehicles Throughout the United States and Provinces of Ontario and Quebec, Canada, 1931-32, compiled by E. Austin Baughman, Commissioner of Motor Vehicles, State of Maryland. See Appendix A.

³ United States Census of Agriculture, 1930.

Here appears further lack of uniformity among the States, despite the fact that the operator's license is now generally regarded as a keystone in the arch of highway safety. Only 25 States and the District of Columbia require operators to be licensed; 30, however, stipulate a special license for chauffeurs. Even more significant is the fact that in only 18 States and the District of Columbia is any examination required for applicants for operator's license; 13 of these have driving and vision tests, and written or oral queries on the motor vehicle laws. The minimum age limit for operators in 19 States and the District of Columbia is 16 years; in others the limit ranges down to as low as 12 years, and 13 States set no definite limit, the law usually permitting "any person" to be licensed.

Financial responsibility.—With the vehicle officially identified and in operation, it becomes immediately a factor in the general public welfare. Nothing can entirely guarantee it against accident, with resultant risk to life and property. The total cost of automobile accidents in the United States in 1931, including both personal injury and property damage, has been variously estimated at from \$1,000,000,000 to more than \$2,500,000,000. Inevitably there has arisen a demand for some sort of public liability protection on the part of owners and operators of motor vehicles which will tend to insure payment of compensation for injury or damage.

One State, Massachusetts, has tried the plan of compulsory insurance for all drivers, but its success has been questioned, as the number of motor vehicle accidents reported has increased rather than diminished in that State since passage of the law, and insurance rates have risen. On the other hand, 19 States have adopted legislation along the lines of the so-called financial responsibility law which provides: (1) That any person convicted of a major traffic offense must, before his permit is restored, show financial responsibility for the sum of \$11,000, of which \$1,000 is for property damage and \$10,000 for injury to one or more persons in an accident, by posting collateral, taking out bond, or obtaining liability insurance; (2) that a motorist failing to pay a judgment levied against him by a court of competent jurisdiction up to this amount for an accident shall be deprived of his permit to drive until he meets the requirement of the law; (3) that all States recognizing this law maintain reciprocal relationship, prohibiting a motorist convicted in one State from operating in another. The following States have enacted safety responsibility laws: California, Connecticut, Delaware, Indiana, Iowa, Maine, Maryland, Minnesota, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Rhode Island, South Dakota, Vermont, Virginia, and Wisconsin.⁶

In addition to compulsory insurance and financial responsibility as methods of insuring protection for the public, other plans have been advanced from time to time, but have not been embodied in law. An example is the so-called "Marx plan" under which a State compensation fund would be created by compelling all vehicles to contribute a premium to such fund in order to compensate victims of accidents in a manner similar to the workmen's compensation act. Another plan would require compulsory insurance, but with rates depending upon the accident record of the insured and with damage claims handled through State-appointed commissions

rather than the civil courts. These various plans, being untested by actual experience, remain controversial.

Traffic regulation.—The basically important question of the regulation of traffic, with its attendant potential benefits in reducing the tragic toll of accidents on streets and highways, has received attention to some degree in every State. More or less complete regulations exist on such matters as rule of the road, speed restrictions, pedestrians' rights, traffic signs and markers, etc., although there are considerable divergencies among the several States. For instance, 31 States and the District of Columbia have fixed definite speed limits for the operation of private passenger cars in the open country, these varying from 30 to 50 miles per hour, and have usually set lower limits for commercial vehicles. Fourteen States require that vehicles be driven at a "reasonable and proper speed," to quote a phrase frequently employed, although certain of them fix a limit beyond which higher speed is deemed "prima facie evidence of improper driving." Three States set no limitations to speed. In addition to State laws governing speed, most municipalities have their own regulations.

Eight States have declared it unlawful to throw lighted cigarettes out of a motor vehicle. Passing a street car on the left is strictly prohibited in 32 States. Forty States require drivers to use hand signals to indicate their intention of turning or stopping, but the nature of these signals is not uniform.⁷

Up to this point in our consideration of the various phases of motor vehicle control, we have been dealing with those matters which place basic administrative safeguards upon vehicles in the interest both of owners and of the public welfare. Now we enter a field where uniformity is even more lacking, and yet where regulation may completely put a stop to certain forms of motor transport. In this field are the questions of control over the physical and business characteristics of vehicles, their taxation, and the privilege, or lack of privilege, of operation outside the State of registration.

Physical characteristics.—It is necessary that limits should be fixed to the size of the larger vehicles to prevent their reaching dimensions which would actively endanger every other user of the highway. Limits have, in fact, been fixed by most States, but in many cases they reveal small trace of being based upon scientific or factual data. In the laws now in effect⁸ practically the only dimension on which there is general uniformity is that of width, 38 States and the District of Columbia having set this figure at a maximum of 96 inches; but Florida limits it to 84 inches (except in the case of for-hire vehicles); North Carolina, Oklahoma, and South Carolina to 90 inches; and Maryland to 93 inches. A few States permit widths in excess of 96 inches. The maximum permissible height varies from 11 feet to 14 feet 6 inches, with 15 States and the District of Columbia uniting on 12 feet 6 inches, and with no regulations in effect in nine States. The maximum permissible length for a single vehicle varies from 26½ to 40 feet. The maximum permissible length for a combination of vehicles varies from 30 to 85 feet, with 13 States and the District of Columbia uniting on the latter high figure. The permissible number of vehicles in a train or combination of vehicles varies from two to four, with no regulations in 13 States and the District of Columbia.

⁶ Report of the Committee on the District of Columbia, U. S. House of Representatives, to accompany Senate bill 3053, 72d Cong., May 9, 1932, p. 5. Virginia this year entered the list of States having financial responsibility legislation.

⁷ Summary of Motor Vehicle Regulations, 1932 edition, issued by the American Automobile Association and the Albert Russel Erskine Bureau for Street Traffic Research, Harvard University.

⁸ See Appendix B.

The greatest variance of all exists among the various States in the matter of weight. Factors of wheel load, axle load, or load per inch of tire width enter into the calculations, but gross vehicle weight is usually the final consideration, and this varies in the case of a pneumatic-tired, 4-wheel vehicle from 15,000 to 36,000 pounds. In the case of a pneumatic-tired, 6-wheel vehicle, the range is from 16,000 to 48,000 pounds. A typical combination of vehicles, including a 4-wheel tractor, 4-wheel semitrailer and 6-wheel full trailer, has maximum weight limits (on pneumatic tires) varying from 24,000 to 102,000 pounds, but at least 13 States do not permit operation of a combination of units of this size.

The various items of equipment required in the several States indicate similar lack of uniformity. As a single example, a recent compilation⁹ of State regulations on clearance lights shows great variety. California requires a blue clearance light in front, red or green in the rear; Delaware exacts a green light in the rear, white light in front; Illinois a yellow or amber reflector in front, a red reflector in the rear; Iowa, white marker lights or side reflectors; and so on. In actual practice this has sometimes meant changing the lighting equipment of large interstate vehicles at each State line crossed. The whole question of the equipment of the larger types of vehicle, particularly those used in common-carrier operations, upon which the various State regulatory bodies have issued many diverse rulings, is especially confused. Braking requirements are somewhat less involved, with the usual formula calling for brakes "adequate to stop within a safe distance and hold the vehicle." In some States, however, particularly those in which periodic inspection of vehicles is held, the safety of brakes is determined by their ability to stop the vehicle within a specified distance at a given rate of speed. Safety-glass equipment is a matter of comparatively recent origin, and few States have taken action upon it as yet.

Control over the physical characteristics of vehicles is also being extended in some States to cover a compulsory periodic inspection, to which all owners must submit their cars at stated intervals, usually once a year. Ten States now require such inspection, although one of them limits it to busses and another to city operations.

Business characteristics.—Control of vehicles according to their business characteristics comprises one of the most difficult elements of the problem. Each State has considered the question primarily from the angle of its own needs and conditions, with political and competitive interests sometimes the controlling factors. The business characteristics of a vehicle depend, of course, upon the nature and purpose of its use, and a primary division of vehicles would separate them into two classes—those privately owned and operated and those operated for hire. This division, entirely arbitrary from an engineering standpoint, for the roads and bridges feel no difference between a private and a for-hire vehicle, has been accepted as a proper distinction in most States of this country and in many foreign countries, under the assumption that an operator using the public highways as a place of business for direct profit to himself should pay more for these facilities than the private operator who carries his own goods or merchandise, or his own family or friends, in vehicles owned and operated by him only incidentally to his

major business. Under the for-hire class have grown up two main divisions, common-carrier and contract-carrier. The common carrier of persons (the bus) is apparently the simplest type of these vehicles to control; the carrier of goods or merchandise (the truck) is more elusive, and raises questions of control which are not easy to answer.

Consideration of these business characteristics of motor vehicles brings uppermost the question of the competition of for-hire vehicles with other forms of transport, notably the railroads, which has influenced much of the legislation now found in many States. There has been a tendency to regard rail transport and motor transport as more or less identical in character, and therefore properly subject to similar forms of control. This assumption, however, ignores the basic difference between them, which is the difference between essentially monopolistic and essentially individualistic enterprises. The railroad represents a permanent investment of large capital; its operations are confined to a fixed right of way, of which it enjoys exclusive ownership and use; once established, it partakes of the nature of a natural monopoly, and its service and rates are matters of primary concern to the communities it serves. The motor carrier, on the other hand, is in its essence an individualistic enterprise, open to operators with small capital, not limited to a fixed right of way, possessing great flexibility in the matter of operating units and routes of haul, performing chiefly short-haul service, depending for its existence upon the immediate value of the services it renders, and subject always to keen competition (which is a natural and effective check upon its rates and services) from other kinds of vehicle operators as well as from rail and other forms of transport. In fact, the only form of motor transport which can be logically compared with railroad transportation, from the standpoint of public control, is that which deliberately assumes some of the attributes of the latter—as, for instance, the common-carrier bus, which must operate over a fixed route and give regular service in order to attract profitable patronage. These observations illustrate some of the difficulties which are being encountered in arriving at satisfactory solutions to the new problems created by for-hire motor vehicles.

Parenthetically, but as a means of showing truck traffic in its true relation to the business of transportation as a whole, it may be said that the Interstate Commerce Commission has recently estimated that in the peak year 1929, when all forms of traffic were at record levels, only 4.2 per cent of the inland traffic of the United States was carried by intercity trucks.¹⁰ No estimate was made of the proportion of this small percentage handled by for-hire operators as distinguished from private operators. United States Army transportation experts have estimated that not over 5 per cent of the service of the railroads could be replaced by highway motor transportation at the present time.¹¹

As previously indicated, highway transport is predominantly private in character, and its competition with other forms of transport must be ascribed in the main to privately owned and operated passenger cars and trucks.

The widely diversified nature of State legislation regarding the business characteristics of motor vehicles

¹⁰ Interstate Commerce Commission Report No. 23400, p. 403.

¹¹ Address by Ezra Brainerd, jr., member of the Interstate Commerce Commission, before the National Association of Railroad and Utilities Commissioners, Richmond, Va., Oct. 20, 1931.

makes analysis difficult. Privately owned and operated vehicles generally enjoy liberality of treatment, in so far as the business nature of their operation is concerned, although we shall later see in discussing recent legislation in Kansas that business control of certain classes of private vehicles has also begun. With regard to for-hire vehicles, however, most States have adopted legislation which definitely affects the common-carrier type of operation, and in numerous cases the contract carrier as well. These matters will be further discussed in considering these special classes of vehicles (see p. 159).

Taxation.—Motor-vehicle taxation in the United States to-day presents a picture of almost complete nonuniformity.¹² The principal taxing jurisdictions have been the States and municipalities; but this year the Federal Government has also entered the field, for the first time since abolition of the war-time excise taxes, with a tax on gasoline and oil and new excise taxes on motor vehicles, parts and accessories, and tires. The two principal types of taxes levied are "general" and "special." Under the former classification fall the ad valorem taxes imposed by many States on the motor vehicle as personal property; under the latter are the annual registration and license fees, motor-fuel taxes, and similar impositions. The annual registration and license fees have diverse bases: Weight, horsepower, cost price or value, piston displacement, tonnage capacity, sometimes an arbitrary flat rate, and sometimes a combination of certain of the above factors. Such vehicles as trailers, hearses, and ambulances often have special rates. For-hire vehicles, frequently divided into numerous classes according to type of operation, are assessed extra taxes in many States.

As a particularly striking example of nonuniformity in taxes, it has been calculated¹³ that the range of annual registration fees on a privately owned and operated 3-ton truck (net weight 7,000 pounds, capacity 6,000 pounds, gross weight 13,000 pounds, 30 horsepower, value \$4,500, equipped with pneumatic tires) is from \$9.60 in Maryland to \$134 in New Mexico, with \$66.36 as the average for the country as a whole; and upon the same type truck when operated as a common carrier, the range is from \$18 in Missouri to \$900 in North Carolina, with \$271.95 as the nation-wide average. The two average figures cited are for the year 1931; and when compared with the figures for 1923, respectively \$53.50 and \$90, they demonstrate the rapid rise in the taxation of trucks in general and of common-carrier vehicles in particular. These fees are in addition to the usual gasoline taxes, the estimated nation-wide average of which in 1931 on this typical 3-ton truck was \$95.55 for the private vehicle and \$193.23 for the common carrier, the difference being due to higher mileage of the latter. The taxes cited do not include personal property, municipal, franchise, wheelage, or other local taxes.

The volume of taxes paid by motor vehicles in the United States is indicated by the estimated figure of \$1,010,000,000 for 1930, this impressive total being made up as follows: Registration fees, \$350,000,000;

gasoline taxes, \$515,000,000; municipal taxes, \$20,000,000; personal property tax, \$125,000,000.¹⁴ For 1931, the grand total was estimated at \$1,025,735,000 by the National Automobile Chamber of Commerce, the increase being due entirely to higher receipts from gasoline taxes, which offset decreases in some of the other categories.

Privilege of operating outside State of registration.—The extent to which motor vehicles registered in one State may operate in another naturally depends upon the character of legislation in the individual States in question. Since this legislation usually possesses little uniformity, the motor vehicle may be confronted by a large number of conflicting regulations as soon as it leaves the State in which it is registered. If all laws in each State were enforced to the letter against all vehicles entering from other States, travel by highway across State lines would unquestionably be much reduced. To avoid some of these complications a system of reciprocal arrangements has grown up among the States, based usually on the principle of "doing unto others as others do unto us." Application of this principle, however, is contingent upon the laws of the individual States; thus, one Commonwealth may have rigorous limitations as to length of time reciprocity is granted to private passenger cars, or as to the size and weight of vehicles, while another has more liberal regulations on these matters; the movement of vehicles between two such States is, therefore, automatically reduced to the terms of the more restrictive legislation.

Recent digests of State laws¹⁵ show many interesting facts regarding existing reciprocal arrangements. The most liberal provisions apply to private passenger automobiles, and about half of the States offer unconditional reciprocity (which means freedom of operation throughout the current registration year of the State of origin) to all passenger automobiles from other States granting similar privileges. In other Commonwealths the period of free operation is limited to 30, 60, or 90 days, or in one case (New Mexico) to 6 months. Certain States require foreign visitors to obtain non-resident stickers for their cars.

In the case of trucks and other commercial vehicles the regulations are much less liberal. Among the States offering no reciprocity whatever to private or for-hire commercial operators are: Arizona, California, Colorado, Florida (except upon special permit), Idaho, Oklahoma, and Tennessee (except for occasional trip haul). Other States place heavy restrictions upon the commercial vehicles entering from "foreign" jurisdictions; for example, Arkansas limits the number of trips by private operators to four per month, and allows no reciprocity on for-hire vehicles. Idaho permits commercial cars to operate for profit, not to exceed three months, under temporary license at one-eighth the annual fee per month. Kansas requires for-hire vehicles to register if operated more than 10 consecutive days. Maine offers reciprocity only on vehicles up to 1½ tons' capacity. Maryland stipulates that foreign commercial vehicles can not carry on intrastate business or operate over fixed routes or between fixed termini. Michigan allows private trucks 10 days'

¹² Included in the source material on this subject may be cited *A Study on Motor Vehicle Taxes*, published by the American Automobile Association, Washington, D. C., in 1931, and *Special Taxation for Motor Vehicles*, 1931 edition, of the Motor Vehicle Conference Committee, 366 Madison Avenue, New York City.

¹³ Facts and Figures of the Automobile Industry, 1931 Edition, p. 40.

¹⁴ *Special Taxation for Motor Vehicles*, 1931 Edition, Motor Vehicle Conference Committee.

¹⁵ Baughman compilation (see footnote 5, p. 155) and Summary of Motor Vehicle Acts, 1932-33, Automobile Club of Southern California.

reciprocity, but requires that all public carriers operating over fixed routes or between fixed termini must register.

Enforcement.—The final element in the problem of regulating motor vehicles in general is that of enforcement of the motor vehicle laws. This duty has always rested exclusively in the hands of the individual States. State highway patrols or inspection forces now exist in 30 States, with as many as 475 officers employed in a single State. Eighteen States apparently have no special police force charged with enforcing their motor-vehicle regulations, these duties usually being entrusted to the regular peace officers.

SPECIAL CONTROL OF FOR-HIRE VEHICLES

Although the problem of regulating motor vehicles in general is difficult enough in itself, there is a special class of vehicle which has created a set of additional perplexities all its own. These are the for-hire vehicles, including common carriers and contract carriers of persons or property or both.

These for-hire vehicles offer a distinct service to the public, and unquestionably have become a permanent factor in American economic life. The busses, depending for their successful operation upon regularity of service over fixed routes, have lent themselves readily to control by State regulatory bodies, and all States except Delaware now regulate these common carriers of persons. The bus transportation industry is well organized, and its efforts to promote both the public safety and the interests of its members have been noteworthy.

For-hire trucks, on the other hand, present a different picture. Although many of them are common carriers, an even greater proportion are contract carriers and do not hold themselves out indiscriminately to serve the general public. The line of demarcation between these two groups is not always clear; and, because of the inherent flexibility of the motor vehicle and its mode of operation, pressure in the form of severe regulation may promptly transform the common-carrier operator into a contract carrier, or the contract carrier into a private owner. The industry is not well organized, and the divergent interests of the for-hire operator and the private owner, the common carrier and the contract carrier, the over-the-road hauler and the local truckman have further confused the situation. At the same time, the weight of conflicting State legislation, of heavy taxation, and of lack of reciprocal privileges bears most heavily upon these carriers who are in the business of highway transportation.

The Interstate Commerce Commission has summarized the present State regulation of common and contract carriers by motor vehicles as follows:

A survey of the statutes of the 48 States (excepting Delaware, which has no regulatory body nor regulatory act dealing with carriers) reveals that 47 States and the District of Columbia have laws regulating the operation of motor vehicles as common carriers of passengers, 39 States and the District of Columbia have laws regulating the operation of common carriers of property, and 34 States have enacted laws dealing with the operation of contract carriers. Concerning this last group, 23 States have laws dealing with the operation of contract carriers which are in effect, 4 States have made attempts which have been declared invalid by the courts chiefly because of an attempt to subject the contract carrier to the same type of regulation applicable to the common carrier, and 7 States have laws which, though not yet attacked in the courts, seem to fall into the same errors as the other voided legislation.¹⁶

Even the bodies in which administrative control over public carriers is vested vary with the different States. A compilation made this year¹⁷ shows, for example, that common-carrier motor vehicles are under the control of the railroad commissions in 14 States, while in others the regulatory bodies include public service or public utilities commissions, corporation commissions, departments of public works, etc.

In those States which control the operations of common carriers, a certificate of convenience and necessity is usually required of such operators before they can begin intrastate operations. Application for a certificate is made by the carrier to the properly constituted authorities, listing the routes to be covered, schedule of operations and rates or fares, vehicles to be used, and similar data, and a hearing is held at which the public and competitive interests are invited to appear. Decision is then made as to whether or not the desired certificate is to be granted. Since the operator has identified himself as desiring to perform common-carrier service, his legal status is fixed, and the process of control over him offers no insurmountable difficulties.

With the contract carrier the case is different. His service is not to the public but to individual employers, and private contracts, rather than public and competitive interests, govern his operations. Some contract-carrier service is of a regular character, an example of this being the contract trucking for chain groceries in some localities; some of it is irregular in nature, as, for example, the moving van, and similar activities which are of nonrecurring character. In addition, there is an undoubtedly large number of private owners who may occasionally haul for hire: The farmer who carries his produce or livestock to market and takes back any available pay load, or the drayman who may intermittently perform over-the-road service. Control of such operations, or even their detection, sets up manifestly grave administrative difficulties.

The above considerations apply to intrastate operations. When interstate service is performed—such service having been defined as “commerce between any place in a State and any place outside thereof; or between points within the same State but through any place outside thereof”¹⁸—the constitutional guarantee regarding the freedom of interstate commerce takes effect, and applications even of common carriers for certificates of convenience and necessity in interstate operations have been pronounced outside the power of State authorities to deny. State laws frequently make specific exemption to this effect. Nevertheless, the Public Utilities Commission of Ohio recently denied an application for an interstate certificate on the grounds that the highway over which service was to be performed was already congested by traffic. Its action was upheld by the Ohio Supreme Court, but appeal to the United States Supreme Court was taken by the applicant.

Hours of labor of bus and common-carrier truck drivers have been limited in a number of States by rulings of regulatory bodies, and in some cases by statute. Arizona this year enacted a statute making it

¹⁷ Bus Facts for 1932, p. 47.

¹⁸ House of Representatives bill 12739, “to regulate the transportation of passengers and property in interstate and foreign commerce by motor carriers operating on the public highways, and for other purposes,” introduced June 21, 1932, by Representative Rayburn, chairman of the House Committee on Interstate and Foreign Commerce.

¹⁶ Interstate Commerce Commission Report No. 23400, 1932, Appendix F, p. 410.

a misdemeanor for any operator of a for-hire vehicle to remain on duty longer than 12 hours in any 24-hour period, except in case of emergency "where life or property is in imminent danger," and then only up to a maximum of 15 hours.

Every State which regulates motor carriers, directly or indirectly, requires insurance or other financial responsibility as a measure of public protection.¹⁹

On many of these varied questions the States are constantly adding to the volume of legislation already accumulated, or are making substantial revisions. Thus, during the first half of 1932 changes have been made in the regulatory laws of Kentucky, Mississippi, New York, Rhode Island, and Virginia, and these changes were mainly in the direction of tighter restrictions on sizes and weights and on operation of commercial vehicles. Perhaps the most drastic of all is the new Kentucky law²⁰ which entirely prohibits the operation of full trailers, limits the length of a single vehicle to 26½ feet and that of a tractor-semitrailer combination to 30 feet, reduces the maximum permissible weight of either a single vehicle or a tractor-semitrailer combination to 18,000 pounds gross, places both contract carriers and common carriers under the jurisdiction of the State tax commission, and imposes mileage fees upon them which are applicable also to interstate operators.

New problems also are continually arising, upon which various States take action as the need to do so becomes apparent. The recent rapid growth of the "share expense" enterprises in tourist transportation, by which small parties of persons agree to defray the expense of travel in private automobiles, is a case in point. At the annual convention of the National Association of Motor Bus Operators in Chicago this year it was reported that the States of California, New Mexico, and Louisiana now regulate this form of travel.²¹

THE JUDICIARY ANGLE

The first result of this intricate and conflicting mass of legislation in the several States has been a large volume of litigation, in which interests affected by the new laws have often sought injunctions against their enforcement. The courts have been continually called upon to interpret the new laws, and cases have frequently been carried to the Supreme Court of the United States for final decision.

Two of the most important recent opinions were handed down by the Supreme Court simultaneously on May 23, 1932, covering certain aspects of new Texas and Kansas laws.²² Both of these State laws were upheld by a unanimous decision of the Supreme Court, Mr. Chief Justice Hughes delivering the opinion in both cases.

One of the unusual provisions of the Texas law in question was that fixing a pay load of 7,000 pounds as the maximum permitted on any "commercial motor vehicle" (which the act defines as one designed or used for the transportation of property), truck tractor, or

trailer operating outside of an incorporated city or town; with the additional provision, however, that this maximum permissible load may be increased to 14,000 pounds in the case of vehicles "used only to transport property from point of origin to the nearest practicable common carrier receiving or loading point or from a common carrier unloading point by way of the shortest practicable route to destination, provided said vehicle does not pass a delivery or receiving point of a common carrier equipped to transport such load," or when used to transport property "from point of origin to point of destination" when the latter is less distant from the point of origin "than the nearest practicable common carrier receiving or loading point equipped to transport such load." On this point the opinion states:

It is said that the exception was designed to favor transportation by railroad as against transportation by motor trucks. If this was the motive of the legislature, it does not follow that the classification as made in this case would be invalid. The State has a vital interest in the appropriate utilization of the railroads which serve its people as well as in the proper maintenance of its highways as safe and convenient facilities. The State provides its highways and pays for their upkeep. Its people make railroad transportation possible by the payment of transportation charges. It can not be said that the State is powerless to protect its highways from being subjected to excessive burdens when other means of transportation are available. The use of highways for truck transportation has its manifest convenience, but we perceive no constitutional ground for denying to the State the right to foster a fair distribution of traffic to the end that all necessary facilities should be maintained and that the public should not be inconvenienced by inordinate uses of its highways for purposes of gain. This is not a case of a denial of the use of the highways to one class of citizens as opposed to another or of limitations having no appropriate relation to highway protection. It is not a case of an arbitrary discrimination between the products carried, as in the case of *Smith v. Cahoon*, 283 U. S. 553, 567. The provision of section 7 permitting increased loads under the stated conditions applies to all persons and to all products. The discrimination is simply in favor of short hauls and of operations which, as the District Court found, are confined to small areas and greatly reduce the danger of traffic congestion and highway casualties.

On the general question of State powers to fix motor-vehicle regulations, the same opinion states:

In exercising its authority over its highways the State is not limited to the raising of revenue for maintenance and reconstruction, or to regulations as to the manner in which vehicles shall be operated, but the State may also prevent the wear and hazards due to excessive size of vehicles and weight of load. Limitations of size and weight are manifestly subjects within the broad range of legislative discretion. * * * When the subject lies within the police power of the State, debatable questions as to reasonableness are not for the courts but for the legislature, which is entitled to form its own judgment, and its action within its range of discretion can not be set aside because compliance is burdensome.

In the Kansas case the State law was also upheld. Here the Supreme Court findings are of especial significance because the Kansas law represents one of the first attempts by a State to regulate the business operation of private motor vehicles on its highways. The act in question contains interesting definitions. A public motor carrier of property or passengers is defined as one transporting for hire as a common carrier, having fixed termini or route; a contract motor carrier of property is defined as one who is not a public motor carrier and is engaged in transportation of property for hire as a business; and a private motor carrier of property is defined as one transporting "property sold or to be sold by him in furtherance of any private commercial enterprise." Public motor carriers in intrastate commerce must obtain certificates of convenience and necessity, and contract motor carriers and private motor carriers

¹⁹ For further discussion of these intricate phases of for-hire carrier regulation the interested reader is referred to the Interstate Commerce Commission Report on Docket 23400, already cited; an article on State Regulation of Motor Vehicles Operating in Interstate Commerce, by Mac Asbill, in *American Bar Association Journal*, February, 1931; and an article on Regulation of the Contract Motor Carrier Under the Constitution, by La Rue Brown and Stuart N. Scott, *Harvard Law Review*, February, 1931.

²⁰ Kentucky Acts, 1932, chs. 104 and 106.

²¹ *New York Times*, Oct. 9, 1932.

²² Opinions of the Supreme Court of the United States, No. 826, October Term, 1931 (Texas) and No. 677, October Term, 1931 (Kansas).

of property, either in intrastate commerce or in interstate commerce, must obtain licenses from the public service commission. In addition to license fees, all three classes of carriers must pay a tax of five-tenths mill per gross ton-mile, keeping records to certify to the ton-miles traveled monthly. No certificate or license is to be issued by the commission until a liability insurance policy approved by the commission has been filed. The act does not apply to (1) motor carriers operating wholly within any city or village of the State, (2) private motor carriers operating within a radius of 25 miles beyond the corporate limits of such city or village, (3) the transportation of livestock and farm products to market "by the owner thereof or supplies for his own use in his own motor vehicle," and (4) the transportation of children to and from school.

As regards the tax imposed on "private motor carriers of property," the Supreme Court opinion holds that "requirements of this sort are clearly within the authority of the State which may demand compensation for the special facilities it has provided and regulate the use of its highways to promote the public safety. Reasonable regulations to that end are valid as to intrastate traffic and, where there is no discrimination against the interstate commerce which may be affected, do not impose an unconstitutional burden upon that commerce." As for the distinction between operations under or over a radius of 25 miles of the private carrier's home city or base, "no impropriety in assessment or in collection * * * or denial of remedy, is disclosed."

These decisions by the highest tribunal of the Nation are of fundamental importance and may vitally influence future legislation, since they uphold the powers of State legislatures to regulate minutely the operations of commercial motor vehicles and justify the taking into consideration of competitive interests, such as railroads.

Numerous decisions have also been made by lesser courts on regulatory questions, but space does not permit of any discussion of them here. Rulings of regulatory bodies and opinions of State attorneys general have further affected the business phases of vehicle regulation in many States. The effect in general has not been one of clarification or simplification of the basic problems of motor vehicle regulation.

EFFORTS TOWARD UNIFORMITY

The second result of the existing state of regulatory legislation has been a countermovement toward uniformity and greater liberality in some noteworthy quarters.

The most serious work performed to date on certain fundamental aspects of the problem has been done by the National Conference on Street and Highway Safety, which held sessions in 1924, 1926, and 1930, at which a large number of influential delegates assisted in drawing up a uniform vehicle code for consideration and enactment by all States. To the same general end, that of promoting safety on streets and highways, the American Automobile Association, and the National Safety Council are devoting a large part of their attention.

Among State officials who administer the vehicle laws and are, therefore, at handgrips with the problem, a movement toward greater uniformity is under way in certain parts of the country. In the Central States especially much thought has been given to the question in a series of conferences at which as many as 13 States

have been represented. In 1931, at a meeting in Detroit, a committee on uniformity of the motor vehicle commissioners of the Central States was organized and has since held sessions from which have grown a set of recommendations to be presented to State legislatures. The Eastern Conference of Motor Vehicle Commissioners, in which 22 States are officially represented, has arranged to invite the motor vehicle commissioners of all other States in the Union to join with them in the discussion of questions of uniform legislation and reciprocal relations.

Moreover, State administrative officials, facing a dilemma between their duty to enforce strictly the provisions of rigorous laws and the inevitable repercussion such enforcement brings upon their own commercial vehicle operators entering neighboring States, have sometimes found it necessary to enter into emergency reciprocity agreements with their neighbors as the only means of preventing a complete breakdown of truck traffic. The trouble has usually begun when one State has started to impound all trucks from other States and to hold them until a license fee is paid for each vehicle or until the owners or drivers pay fines. In retaliation, the other States affected have followed suit, and a sort of border warfare has resulted until stopped by mutual agreement. Each experience of this kind has illustrated anew the vital part played in economic life by the commercial vehicle and the natural pressure of motor-vehicle transport across State lines. The sum total of such experiences is embodied in the tolerant attitude of many States toward at least the foreign privately owned and operated vehicle—an attitude which, it may be safely said, would become more pronounced were it not for the constant changes being made in State regulations and the consequent impossibility of maintaining a permanent administrative policy.

The National Association of Railroad and Utilities Commissioners has been considering motor transportation problems for a number of years, having deemed the question sufficiently important to appoint a special committee on motor-vehicle legislation as early as 1925, in addition to a regular committee on motor-vehicle transportation. The annual conventions of the association have given prominence to discussion of these subjects.

Another group of officials considering these matters is the American Association of State Highway Officials, the membership of which includes the highway and bridge engineers of the several States. This association, through technical committees, is working toward the establishment of standard principles in highway construction, administration, finance, and use.

More than 40 agricultural, industrial, and trade organizations, comprising a large percentage of shippers using all forms of transportation, together with automobile clubs and various branches of the automotive industry, have recently joined in the formation of a National Highway Users' Conference with the purpose of consolidating and strengthening the efforts of all groups interested in motor transport. The same interests are assisting in coordinating the efforts of local organizations of similar character to deal with the legislative situation in each State. Another influential body working toward uniformity in regulations is the Motor Vehicle Conference Committee.

Within recent weeks national committees have been formed to study broad questions of transportation, and

in particular the relationship between highway and rail transport.

Automotive engineers are beginning to contribute much clarification to the mechanical problems involved, and the Society of Automotive Engineers is now preparing recommendations on some of the points relating to size and weight of vehicles. Engineers of the United States Bureau of Public Roads are studying certain technical phases of the problem, including impact of vehicles on highways and the consequent effect upon the road surface about which so many unscientific and irrational opinions have been advanced in the past. Scientists at the United States Bureau of Standards are working on questions of adequate lighting and braking for vehicles.²³

Commercial vehicle operators and owners, vitally concerned in the present trend of State legislation, are banding together in many States in defense of their interests, and their association officers are beginning to correlate their efforts on a nation-wide scale.

Economists and business associations, such as the United States Chamber of Commerce, the National Industrial Conference Board, the National Tax Association, and others, are striving to find answers to those questions of cost of motor transport, public investment in highways, taxation of vehicles and the use to which the resulting tax funds are put, and the like, which will show accurately the true position of the motor vehicle in our economic structure and the facts by which its right to exist and develop should be judged.

From all these groups of serious and capable workers, convinced of the value of the motor vehicle to modern society and its present desperate need for fairness and intelligence in legislation, may soon be expected to arise contributions of the greatest value to the ultimate solution of the problem of motor vehicle regulation.

PROPOSED LEGISLATION

Despite the large volume of motor vehicle legislation already on the statute books, the wave of lawmaking in the States has far from spent itself. Early in 1933 the legislatures of 43 States are scheduled to hold their regular biennial sessions and, unless all signs fail, most, if not all of them, will consider bills which can hardly be expected to improve the existing complicated situation. The drive for increased tax revenue alone will be used to justify heavier burdens on motor vehicles, and particularly on the commercial types, notwithstanding the fact that returns during the first half of 1932 show conclusively that motor vehicle taxes have already entered a period of diminishing returns.

In the national field the United States Congress, during the coming session, will resume consideration of Federal regulation of motor vehicles in interstate commerce, in which it has been engaged ever since the second session of the Sixty-eighth Congress (1925-26). The first bills, proposing comprehensive control by the Interstate Commerce Commission of motor busses and motor trucks engaged in interstate commerce, were introduced by the respective chairmen of the Senate and House Committees on Interstate Commerce. These bills in modified form have been introduced at each succeeding session of Congress by the committee chairmen. The closest approach to enactment came in March, 1930, in the second session of the Seventy-

first Congress, when the House passed its committee bill to regulate busses and reported it to the Senate, which left it as unfinished business on adjournment. At the next session this bill was recommitted, and died with the adjournment of the Seventy-first Congress. Committee bills in both Senate and House were again revised and introduced in the first session of the Seventy-second Congress, and much valuable testimony was taken upon the Senate measure,²⁴ but neither bill was reported out. Numerous other regulatory measures have also been introduced in both Houses of Congress. The present committee bills meet certain recommendations of the Interstate Commerce Commission, and differ from previous bills in that they separate holding-company provisions from the main bills.

Recommendations for Federal legislation were made in a report of the Interstate Commerce Commission on the subject of Coordination of Motor Transportation, issued this year.²⁵ This report contained a summary of evidence presented by many witnesses at a nation-wide series of hearings held in 1930 and 1931. In it the commission recommended Federal legislation on the following points: Regulation by the Interstate Commerce Commission of all motor carriers for hire engaged in transportation of persons or property on the public highways in interstate commerce; requirement of a permit to operate, and liability insurance; standard records of operations; authorization of through rates between common carriers by motor truck and common carriers by rail and by water; creation of joint boards composed of members of State regulatory bodies to cooperate with the commission in administering regulations; and the conducting of an impartial and authoritative investigation by Congress as to "whether and to what extent motor, water, and air carriers operating in competition with the railroads are receiving direct or indirect Government aid amounting, in effect, to a subsidy; and, if so, what steps, if any, are necessary to correct this situation, with a view to placing competition on a just and equitable basis; and that such investigation, if instituted, be extended to cover also the question of whether it is desirable in the public interest that regulations affecting public safety and convenience in the operation of motor carriers be made uniform throughout the country, and if so, how such uniformity may best be brought about."

This same report also recommends that "railroads, whether steam or electric, and water carriers, subject to the act, should be specifically authorized to engage in the transportation of both persons and property by motor vehicles in interstate commerce over the public highways and that thereafter such service, when directly engaged in by any such rail or water carrier, should be subject to the provisions of the interstate commerce act and legislation supplemental thereto."

In the opinion of the commission, "For the present no requirements should be made regarding the qualifications of drivers, hours of service of employees, and the size, length, weight of load, and speed of motor vehicles operating for hire on the public highways in interstate commerce." On this point the commission adds, "In order to obtain desirable uniformity in such regulations so far as they affect interstate commerce it may eventually become necessary for Congress to occupy this field."

²³ Here may be cited an interesting phrase from the opinion of the United States Supreme Court in the Texas case previously referred to: "To make scientific precision a criterion of constitutional power would be to subject the State to an intolerable supervision hostile to the basic principles of our Government."

²⁴ Hearings before the Committee on Interstate Commerce, U. S. Senate, on Senate bill 2793, Feb. 1-8, Mar. 3-15, 1932.

²⁵ Report of the Interstate Commerce Commission on Docket No. 23400, decided Apr. 6, 1932.

POSSIBLE SOLUTIONS TO THE PROBLEM

We have seen how the motor vehicle within the span of a single generation has created a large number of unprecedented problems, and how the attempts to solve them thus far have been characterized by general lack of uniformity, with resultant costly inefficiency and waste. Now we turn our thoughts toward the future in an effort to indicate the general lines of possible action which may lead to more satisfactory solutions of our problems.

The first question which arises is that of jurisdiction. It must be said that the American Federal system of government, with police powers vested in 48 States, has made inevitable much of the nonuniformity presented by motor vehicle laws. In the absence of a centralized authority, and of an enlightened public opinion on these specialized subjects, consistency in legislation could hardly be expected. Yet, given the tremendous size of the field in which control is to be exerted—26,000,000 vehicles, operating over 3,000,000 miles of road, in 3,000,000 square miles of territory—Federal legislation over all phases of the problem is clearly impracticable. Such matters as registration, licensing, traffic regulations, and the like, are most efficiently handled by State units. On other points, however, such, for example, as the interstate operation of for-hire vehicles, the idea has been advanced that the Federal Government might find a proper and useful field of action.

With this general observation in mind, let us rearrange the elements of the problem as previously listed and indicate what now seem to be the most promising angles of approach in the search for amelioration of existing conditions. We may separate our elements into two main groups: Those over which the individual States seem best fitted to retain exclusive powers and those over which the Federal Government might take control if need for such action were definitely demonstrated.

REGULATIONS PROPERLY UNDER STATE CONTROL

Elements of regulation properly reserved to the individual States are outlined in the following paragraphs, together with the channels through which the efforts toward greater uniformity and rationalization of State laws will probably operate.

Registration.—The registration of vehicles and the issuance of identifying license plates are already practiced in all States. Although this phase of the problem is the least in need of remedial action, except, perhaps, as regards a proper type of administrative organization, the Uniform Vehicle Code of the National Conference on Street and Highway Safety offers useful suggestions for complete uniformity on these points. Act I of the code is titled as follows:

Uniform motor vehicle registration act.—An act to require the registration of motor vehicles, trailers, and semitrailers and to require the payment of fees thereupon and to require report to be made of any accident involving a vehicle and to impose certain duties and obligations upon the owners of motor vehicles rented without drivers, and to prevent the taking, transfer of, or injury to any vehicle without the consent of the owner; to provide for the office of vehicle commissioner and a department of motor vehicles and their powers and duties hereunder; to regulate court procedure in certain civil actions arising under this act; to provide penalties for violations of this act and to make uniform the law relating to the subject matter of this act.

In 10 States the registration laws are in substantial harmony with this act.

Antitheft legislation.—Protection for owners in the way of antitheft legislation is embodied in Act II of the Uniform Vehicle Code, the title of which reads as follows:

Uniform motor vehicle antitheft act.—An act to require certificates of title for registered motor vehicles; to facilitate the recovery of stolen or unlawfully taken motor vehicles; to provide for the licensing of dealers in used motor vehicles, trailers, or semitrailers; to prescribe the powers and duties of the vehicle department; to impose certain fees to carry out the purpose of this act; to impose penalties for violations of this act and to make uniform the law relating to the subject matter of this act.

Seven States and the District of Columbia have laws substantially in harmony with this act, while 15 others require some form of certificate of title.

Drivers' licenses.—The basically important requirement for the licensing of operators and chauffeurs is covered in Act III of the code, titled as follows:

Uniform motor vehicle operators' and chauffeurs' license act.—An act relating to the licensing of motor vehicle operators and chauffeurs and to the liability of certain persons for negligence in the operation of motor vehicles on the public highways and to make uniform the law relating thereto.

Eleven States have laws in substantial harmony with the code, while 16 others (including the District of Columbia) have some form of operator's license requirement.

Traffic regulation.—The regulation of traffic on the highways is given needed uniformity by Act IV of the code, under the following title:

Uniform act regulating traffic on highways.—An act regulating traffic on highways and providing for traffic signs and signals and defining the power of local authorities to enact or enforce ordinances, rules, or regulations in regard to matters embraced within the provisions of this act and to provide for the enforcement of this act and the disposition of fines and forfeitures collected hereunder and to make uniform the law relating to the subject matter of this act.

Some of the matters which it covers are as follows: Traffic signs and markers, accidents, reckless driving, speed restrictions, overtaking and passing and other rules of the road, right of way, pedestrians' rights, street cars and safety zones, and stopping, standing and parking, etc. Some of the provisions of this act, it should be noted, particularly in Article XVI, covering length of vehicles, have recently been held in abeyance pending further engineering research. Closely related to this act are two other valuable documents of the National Conference on Street and Highway Safety—a Model Municipal Traffic Ordinance and a Manual on Street Traffic Signs, Signals, and Markings. Eighteen States have laws substantially in harmony with Act IV of the code.

The value of this uniform vehicle code in standardizing State practices on the essential safety provisions above outlined can not be overemphasized. It represents a truly nation-wide approach to the general problem, and expresses the mature views of a host of competent authorities. It has been indorsed by the National Conference of Commissioners on Uniform State Laws and by the American Bar Association. Promotional activities in behalf of the code, looking toward its ultimate adoption by all the States, are in charge of the National Conference on Street and Highway Safety, 1615 H Street N.W., Washington, D. C.

Financial responsibility.—The demand for financial responsibility on the part of owners and operators of motor vehicles, which in a comparatively short time has brought about enactment of legislation of this character in 19 States, may be expected to increase rapidly and the type of law briefly outlined on page 156 appears to offer the best hope of uniform action by the several States.

Physical characteristics of vehicles.—The wide disparity among present State regulations and the recent tendency toward further drastic restrictions in size and

weight would seem to make uniform action by the individual States themselves almost hopeless. What are proper limits to the length, width, and height of vehicles or combinations of vehicles? Factors to be considered are the width of highways, radii of curves, clearance of overhead structures, traffic conditions, and other physical limitations to the passage of the larger vehicles, i. e., busses and trucks. How heavy may a road vehicle be? Here the chief considerations are the strength of the highway pavement and the load limitations of bridges. What should the equipment of a vehicle be? Under this heading may be classified tires, lights, brakes, horns, mirrors, windshield wipers, safety glass, connections between articulated vehicles, and the like. On some of these points Act IV of the Uniform Vehicle Code offers comprehensive suggestions; on others, new or revised recommendations are needed. The question of tires, particularly, needs careful consideration as the major factor in the effect of traffic on the highway pavement; the pneumatic and balloon tires have completely altered the effect of heavy vehicles on the road surface, and are now in practically universal use,²⁶ yet many State laws still appear to be based upon experience with solid tires. Recent development of the superballoon tire constitutes a new subject for study.

These are questions for engineers to answer. That they can be answered is not to be doubted, for highway construction practices have now progressed to a point where definite recommendations regarding the size, weight, and equipment of vehicles can be made on at least a "minimum-maximum" basis—that is to say, basic uniform limits below which no individual State need go in fixing the physical characteristics of vehicles using its highways, thus insuring to manufacturers, operators, and shippers a standard which they know will be recognized everywhere, but above which certain States may set higher limits for the benefit of their own vehicle users if they so desire. As already set forth, important groups are studying these problems and their findings will be of the greatest value. But the arrival at general agreement is a long process; even more distant is the enactment of such agreements into State laws. If early improvement is to be effected in the existing irrational situation, the Federal Government may be the only agency which can lead the States definitely in the direction of uniformity by exerting its powers over interstate commerce. Thus the individual State, while, in fact, retaining control over the physical characteristics of most of the vehicles using its highways, would be strongly impelled toward a uniform standard in fairness to these vehicles if the Federal Government should fix minimum-maximum dimensions for vehicles engaged in interstate commerce, or establish such standards as a condition for participation in Federal highway aid.

Business characteristics.—Unification of State regulation of vehicles according to their business characteristics appears to be particularly difficult. While the primary distinction between an owner-operated and a for-hire vehicle is well established, and while the common carrier constitutes a well-defined type of operation in most States, the contract carrier presents real difficulties in legislation because of the contractual and non-public nature of his service and his essential flexibility of operation. On purely intrastate operations the

individual State has exclusive jurisdiction, and any improvement in the status of for-hire operations within any particular State will likely depend upon the degree of success attained in convincing the public and the legislative assembly of the value of motor-transport service. On interstate operations, where no intrastate service is performed, the Federal Government has the power to legislate if it so desires, and the numerous bills now pending in Congress indicate that some action along this line may ultimately be taken.

Taxation.—The taxation of motor vehicles, which in the final analysis sums up and expresses concretely all the costly inconsistencies in existing State legislation, is the one phase of the entire problem of regulation which is of most immediate concern to every motor-vehicle owner, and to all those who use motor transport directly or indirectly.

A total tax bill of more than \$1,000,000,000 annually in the United States proves the vital importance of this question. During the coming months there will be staged in practically all States a battle between those seeking increased revenue through higher taxes on motor vehicles and those opposing further taxation as endangering the entire fabric of highway transportation, private and public alike. Unfortunately, little of practical value can be suggested as a remedy for the present complex tax situation. The power of the various taxing jurisdictions, whether State, county, or municipal, is not to be questioned, and the tax-levying authorities are answerable for their policies only to their electors. The final solution of these perplexing problems will depend upon an enlightened public attitude as to the value of motor transportation in all its phases, and to the effect of placing undue burdens upon the vehicle and thereby curtailing its usefulness. Here, too, engineers and economists, working to determine the truth about highway costs and usage, and to establish fair and accurate bases for registration fees, gasoline taxes, business taxes, and the like, will be able to guide public opinion by their recommendations.²⁷

Reciprocal privileges.—Uniformity of regulations in the several States would go a long way toward simplifying the problem of reciprocal privileges in the movement of motor vehicles across State lines, but would not solve it entirely. A standard registration system, adequate drivers' licenses and financial responsibility, uniform requirements as to physical characteristics of vehicles, and universally recognized rules of the road, would actually afford much greater freedom of movement to vehicles and safety to the public than now exists; but would not answer the question any State might raise: "What are these foreign vehicles paying

²⁷ Research by the Bureau of Public Roads has resulted in a number of reports bearing on this problem, and complete lists of references will be supplied upon request. The following are thought to be particularly pertinent:

Stresses in Concrete Pavements Computed by Theoretical Analysis, by H. M. Westergaard, PUBLIC ROADS, Vol. 7, No. 2, April, 1926.

Mechanics of Progressive Cracking in Concrete Pavements, by H. M. Westergaard, PUBLIC ROADS, Vol. 10, No. 4, June, 1929.

Motor Truck Impact as Affected by Tires, Other Truck Factors, and Road Roughness, by J. A. Buchanan and J. W. Reid, PUBLIC ROADS, Vol. 7, No. 4, June, 1926.

Interrelated Effects of Load, Speed, Tires, and Road Roughness on Motor Truck Impact, by J. A. Buchanan, PUBLIC ROADS, Vol. 11, No. 7, September, 1930.

Impact Reactions Developed by a Modern Motor Bus, by J. A. Buchanan, PUBLIC ROADS, Vol. 12, No. 2, April, 1931.

Road Impact Produced by Heavy Motor Bus, by J. A. Buchanan, PUBLIC ROADS, Vol. 13, No. 9, November, 1932.

Report of a Survey of Transportation on the State Highway System of Ohio, 1927.

Report of a Survey of Traffic on the Federal-Aid Highway Systems of 11 Western States, 1930.

Domestic Commerce Series No. 66, Motor Truck Freight Transportation, published by the Bureau of Foreign and Domestic Commerce in cooperation with the Bureau of Public Roads, 1932.

Statistical tables issued annually by the Bureau of Public Roads, including: Motor vehicle registrations and fees, Gasoline taxes, State highways built during year, State highways existing at end of year, State highway income during year, State highway expenditures during year, Local roads built during year, Local roads existing at end of year, Local highway income during year, Local highway expenditures during year.

²⁶ Of the 50,270,136 tires shipped by American tire manufacturers in 1931 only 209,445 tires, or less than one-half of 1 per cent, were of the solid and cushion types, according to the Rubber Manufacturers' Association (Inc.).

for the use of our roads?" The principle of reciprocity here encounters the right of taxation, and the only practicable answer is in the nature of a compromise. Privately owned and operated vehicles, including both passenger cars and trucks, already enjoy a favored position as to reciprocal privileges under the laws of numerous States, and the trend toward fuller reciprocity for these vehicles is becoming fairly well established, so that in time free movement everywhere may be possible for any private vehicle properly registered and tax-paid in its State of origin. As regards for-hire vehicles, an equitable apportionment of their privilege or business taxes, in lieu of license fees, among the States they enter or traverse, based on the extent of their operations in each State (e. g., ton-miles or revenue), would eliminate the onerous multiple taxation to which they are now frequently subject. If these for-hire vehicles were to be divided into classes as to regularity or irregularity of service, the problem of control would be further simplified by eliminating from consideration those casual for-hire operators whose use of the highways in any particular State other than the State of registration is sporadic, allowing them the same full reciprocity status as privately operated vehicles.

It should be said that the gasoline tax, which amounted last year to almost exactly half of all motor vehicle taxes collected, obviously represents a return to each State from the vehicles using its highways and thus provides a material compensation to each State for the use of its highways by foreign vehicles, which may be actually increased by liberal reciprocity measures. Here again is a field for exclusive State action, and one in which public opinion and the enlightened self-interest of State authorities must be depended upon for more liberal regulations.

Enforcement.—Since the major portion of the whole problem of motor vehicle regulation appears destined to remain within the control of the individual States, the question of enforcement must remain primarily a State matter. Indications point to the eventual establishment of some sort of highway patrol, especially charged with enforcement of the motor vehicle laws on the public roads, in all States where the traffic problem is sufficiently important to warrant it. Eventually that may well mean every State in the Union.

Regulation of certain special aspects of for-hire operations will also logically rest in the several States when such operations are of intrastate character. Hours of labor, rates, practices, and services of for-hire vehicles, certificates of convenience and necessity for common-carrier operations, insurance or other special financial responsibility requirements, come within this category.

On many of these questions which lie within the exclusive jurisdiction of the individual States there is a pronounced lack of definite data to serve as a basis for wise legislation. The Uniform Vehicle Code, which is a prototype of the kind of action needed, covers but a portion of the whole field of regulation. The remaining elements, which the code does not touch upon, depend for their solution upon the results of special study by each State of its own motor-vehicle problems. Immediate opportunity for an intelligent approach to these questions is presented by the State legislative assemblies which convene in the near future. Given the complexity of the existing situation, and its importance to the general welfare of the Nation, action of the new legislatures might profitably be diverted from creation of further nonuniform statutes, and confined to the creation of commissions of investigation with specific in-

structions to analyze the problem of motor vehicle regulation within the State and, in addition, to confer with commissions of other States working along similar lines. Here would appear to be the most fruitful field of endeavor now open to the States themselves.

THE QUESTION OF FEDERAL CONTROL

On certain elements of the general problem the suggestion has been made from time to time that Federal control is the only means of achieving rational and uniform regulations on a nation-wide scale. Such control, however, has never been suggested as all-inclusive over all types of vehicles, but rather as limited to interstate for-hire operations.

There is no question as to the authority of the Federal Government to enter the field of interstate motor vehicle regulation if it so desires. As stated in the Interstate Commerce Commission Report on Docket 23400, page 382, "It is well settled that the power over commerce among the States conferred upon Congress by the Constitution is complete in itself, extends incidentally to every instrument and agent by which such commerce is carried on, may be exerted to its utmost extent over every part of such commerce, and is subject to no limitations save such as are prescribed in the Constitution." This Federal power has already been exercised over interstate commerce by railroads, pipe lines, telegraph and telephone lines, and by air, and an agency of the Federal Government, the Steamboat Inspection Service of the Department of Commerce, passes upon the seaworthiness of all vessels in water-borne commerce. Even communication by radio is supervised by a Federal body. The field of highway transportation alone has not yet been entered by the National Government.

The question of Federal control, therefore, is not one of legislative powers, but rather one of practicability. Here arise matters of policy to which no final answers can yet be given, and the present discussion accordingly must be confined to a brief statement of some of the considerations involved.

In a broad sense, Federal control over interstate motor transportation, as currently suggested, may be divided into two parts: The regulating of operations of interstate for-hire vehicles according to their business characteristics, and the fixing of minimum-maximum limits to the dimensions, weight, and equipment of vehicles used in such operations. Present legislation in Congress treats of only the first of these.

Decisions on the proper policy for business regulation depend upon the character of the various classes of vehicles to be controlled. For example, interstate common carriers of persons (busses) present a simpler problem than other classes of carriers, and it has been suggested that a competent Federal authority could administer them without great difficulty and possibly with some improvement over the existing system of individual State administration. Such control would logically include issuance of interstate certificates of convenience and necessity, requirements with respect to service, hours of labor of drivers, accounting records and reports, rates or fares, routes, and public liability. The fact that every State of the Union except one now regulates the operation of common carriers of persons constitutes a firm basis for interstate regulation by a Federal body.

The case of the for-hire carrier of property is not so easy to decide. It has been explained that there can hardly be more than 500,000 trucks now engaged in this

class of service, and that the number operating interstate is certainly very much less. But, in any case, it has been pointed out, even 100,000 trucks, owned by many thousands of individual companies or persons, would present a very difficult problem in centralized administration. No entirely satisfactory plan for handling these operators on a Federal basis seems yet to have been advanced, and current opinion appears to regard any control of them by a Federal body to be, at the outset at least, largely of an experimental character. It is along this line of reasoning, apparently, that pending legislation in Congress sets up a simple permit system for carriers of property, both of the common and contract type, designed chiefly to obtain useful data on the scope of the problem, which will permit of possible future recommendations as to more specific means of regulation. From the point of view of the public administrator this method of ascertaining the scope of the problem might prove of value, although there have been some predictions that the plan may be found cumbersome in administration and difficult of enforcement. From the standpoint of the operator and shipper, frank views have been expressed that it will mean an additional burden of expense without compensating advantages. In this divergence of opinion the lack of pertinent data remains the chief obstacle to an equitable decision.

The fixing of size and weight specifications for interstate for-hire vehicles as a proper activity of the Federal Government has also been given consideration, and the view is held in some influential quarters that action on this point would prove a helpful contribution to the task of standardizing this phase of the general problem. Such standardization, it has been held, involving as it does important considerations of public safety and highway construction practices, could hardly fail to benefit vehicle manufacturers, shippers, carriers, and the general public. On the other hand, action of this kind by the Federal Government has been pronounced an invasion of the rights of the individual States.

Regardless of the ultimate decision on this knotty point, a brief discussion of the question of Federal specifications may be of interest here. The general subject of physical characteristics of vehicles, and the minimum-maximum principle for their standardization, have already been explained. It is sufficient, therefore, to add a word about the actual method of fixing such minimum-maximum limits on a national basis.

It may be said that specifications for length, height, width, and equipment of vehicles which may be safely operated on the major interstate highways in every part of the Nation can be fixed to-day by competent engineers. Likewise, a formula for the weight of vehicles, taking into account the factors of strength of highway pavement and bridges, can be framed which will meet the varying requirements of all sections of the country. The highway pavement can be protected by a limitation on the axle load without regard to the total gross load on a vehicle or combination of vehicles. Bridges can be protected by a flexible limitation on the gross load. For this purpose the use of formulas giving the gross load as a function of the distance between the first and last axles of a vehicle or combination of vehicles has been suggested, and such formulas have been adopted in seven States.

Whatever may be the form of State or Federal limitations, provision will always be needed for the proper authorities to issue special permits for the movement of exceptional loads and sizes of vehicles.

CONCLUSION

What is needed most of all, in consideration of the problem of regulating motor vehicles, is more factual data. Not opinions, but facts, should govern the course of future legislation. Broad and truly impartial investigations of the whole problem must be made from diverse points of view. From engineers must come facts as to the cost of construction and maintenance of the various types of highways designed to meet various traffic needs, and the effect upon the roads of the physical characteristics of vehicles; from economists, facts as to the true place of motor transport in the general transportation structure, and the fair charges to be borne by the various types of vehicle in compensation for the road facilities provided for them; from safety experts, further advice on the uniform control of traffic and the reduction of accidents; from officials of Government, facts on standardized regulation, adequate protection for the public, reciprocal privileges among the States, and effective enforcement. In fact-finding investigations of this kind a complete delineation of the elements of the problem such as has been only suggested in this article would appear essential to clear and coordinated results. Agreement upon definitions and terminology alone would not be the least important part of these studies.

On those elements of the problem which have been suggested as falling within the jurisdiction of the individual States the goal of greater uniformity is to be attained through continuation of the educational and cooperative efforts already under way. On those matters which concern interstate commerce a new policy may be necessary. The cost and inefficiency of present conditions must be weighed against the potential difficulties of a new and hitherto untried system of control. The final answer must depend upon the intelligent collaboration of all those interested in the fair and rational development of that indispensable tool of modern society, the motor vehicle.

APPENDIX A

State legislation on certain aspects of motor vehicle regulation

[From "Digest of Regulations Governing the Operation of Motor Vehicles throughout the United States and Provinces of Ontario and Quebec, Canada, 1931-32," compiled by E. Austin Baughman, commissioner of motor vehicles, State of Maryland, Baltimore, Md.]

State	"Stolen car," department or files	Certificate of title	Operator license	Chauffeur license	Minimum age for operators	Examination for operator license	Compulsory inspection of vehicles	State patrol force or inspectors	Maximum speed permitted private passenger cars in open country
					Years				Miles per hour
Alabama			x	x	16				45.
Arizona	x	x	x	x	16	1		x	35.
Arkansas			x	x				x	35.
California	x	x	x	x	16	ldv		x	45.
Colorado	x	x	x	x	15	ldv			rp.
Connecticut			x	x	16	ldv	(1)	x	rp.
Delaware	x	x	x	x	16	ldv	x	x	40.
Florida	x	x		x	14	ldv			45.
Georgia	x			x	16				40.
Idaho	x	x		x			x	x	35.
Illinois				x	15				45.
Indiana	x	x	x	x	16		(2)	x	rp.
Iowa			x	x	15	1		x	rp.
Kansas			x	x	16	ld		x	rp.
Kentucky				x	16				rp (40).
Louisiana	x			x				x	45.
Maine			x	x	15			x	rp (35).
Maryland	x	x	x	x	16	ldv	x	x	40.
Massachusetts	x		x		16	ldv	x	x	pr (30.)

¹ Busses only.

² Cities only.

State legislation on certain aspects of motor vehicle regulation—Con.

State	"Stolen car" department or files	Certificate of title	Operator license	Chauffeur license	Minimum age for operators	Examination for operator license	Compulsory inspection of vehicles	State patrol force or inspectors	Maximum speed permitted private passenger cars in open country
Michigan	x	x	x	x	14			x	rp.
Minnesota	x	x	x	x	14			x	45.
Mississippi	x	x	x	x	16				30.
Missouri	x	x	x	x	16				rp (25).
Montana	x	x	x	x	16			x	rp.
Nebraska	x	x	x	x	16		x	x	45.
Nevada	x	x	x	x	16		x	x	40.
New Hampshire	x	x	x	x	16	ldv	x	x	rp.
New Jersey	x	x	x	x	17	ldv	x	x	35.
New Mexico	x	x	x	x	14	ldv	x	x	40.
New York	x	x	x	x	18	dv	x	x	45.
North Carolina	x	x	x	x	16			x	45.
North Dakota	x	x	x	x	16			x	50.
Ohio	x	x	x	x	16			x	45.
Oklahoma	x	x	x	x	16	ldv		x	45.
Oregon	x	x	x	x	16	ldv	x	x	40.
Pennsylvania	x	x	x	x	16	ldv	x	x	40.
Rhode Island	x	x	x	x	16	lv	x	x	rp (35).
South Carolina	x	x	x	x	12	ld		x	45.
South Dakota	x	x	x	x	15			x	40.
Tennessee	x	x	x	x	16			x	ns.
Texas	x	x	x	x	16			x	45.
Utah	x	x	x	x	16			x	45.
Vermont	x	x	x	x	18	ldv		x	ns.

State legislation on certain aspects of motor vehicle regulation—Con.

State	"Stolen car" department or files	Certificate of title	Operator license	Chauffeur license	Minimum age for operators	Examination for operator license	Compulsory inspection of vehicles	State patrol force or inspectors	Maximum speed permitted private passenger cars in open country
Virginia	x	x	(3)	x					(3)
Washington	x	x	x	x	15			x	45.
West Virginia	x	x	x	x	15	ldv		x	40.
Wisconsin	x	x	x	x	16			x	45.
Wyoming	x	x	x	x	15			x	ns.
District of Columbia	x	x	x	x	16	ldv		x	rp (35).
Total	32	23	26	30				10	30.4

³ Operator license law adopted in Virginia in 1932; examination of new applicants (minimum age, 16 years) obligatory after July 1, 1933.
⁴ On certain streets in the District of Columbia only; speed limit elsewhere, 22 miles per hour.

NOTE.—The following abbreviations are used, either singly or in combination:
 x—Legislative and/or administrative action.
 d—Driving test.
 l—Written or oral test on motor vehicle laws.
 v—Test of vision.

rp—Not greater than "reasonable and proper"; figure in parentheses indicates limit beyond which higher speed is deemed prima facie evidence of improper driving.
 ns—Not specified.

APPENDIX B

Maximum limitations imposed by States on size and weight of motor vehicles on highways outside of incorporated areas,¹ 1932

[ns—not specified; u—single unit; c—combination of units; s—solid tires; p—pneumatic tires; d—dual tires; pl—pay load; L—distance in feet between first and last axle, where weight is given by formula; trailer designations: ½—semitrailer only; 1—1 semitrailer or full trailer; 1½—1 semitrailer and 1 full trailer; 2—2 trailers, either type]

State	Over-all length	Over-all width	Over-all height	Gross weight on 1 axle	Gross weight of 4-wheel vehicle	Gross weight of 6-wheel vehicle	Maximum combination permitted and corresponding gross weight		Remarks
							Number of trailers	Gross weight of combination ²	
Alabama	33u 46c	96	12	12,000	24,000	32,000	1½	32,000	
Arizona	33u 35c	96	14½	18,000	22,000	34,000	1½	90,000	
Arkansas	33u 35c	96	14½	³ 14,820d	25,000+650L	25,000+650L	1½	25,000+650L	Solid tires not permitted after July 1, 1932.
California	33u 60c	96	13½	17,000	22,000	34,000	1½	68,000	
Colorado	33u 60-85c	96s 100p	12½	20,000	30,000	40,000	1½	80,000	
Connecticut	40	102	ns	ns	26,000s 32,000p	40,000p	1	26,000s 40,000p	
Delaware	33u 60c	96	12½	16,000s 18,000p	22,000s 26,000p	⁵ 38,000p	1½	48,000s 50,000p	Private carriers, permit carriers, and certificated private contract carriers.
Florida	35u 45c	84	12	ns	20,000	20,000	1½	40,000	Certificated common carriers.
Georgia	30u 75c	96	12½	17,600	22,000	39,600	ns	ns	Truck tractor, 4-wheel semi and 6-wheel full trailer maximum gross, 83,600 pounds.
Idaho	33u 85c	96	14½	16,000	24,000	40,000	1½	40,000	
Illinois	35u 40c	96	ns	16,000	24,000	40,000	ns	ns	(Maximum gross weight of trailer or semitrailer, 32,000 pounds. After Jan. 1, 1933, pneumatic tires required on all busses, and on all trucks operating at more than 10 miles per hour.)
Indiana	33u 40c	96	12	12,800s 16,000p	600 (L+40)	600 (L+40)	1½	600 (L+40)	
Iowa	30u 45c	96	12	14,000s 16,000p	24,000+450L	24,000+450L	ns	24,000+450L	
Kansas	35u 52c	96	13	16,000	24,000	34,000	2	102,000	On less than 8-inch dual tire equipment. (Solid tires prohibited, except for farm machinery and produce-hauling vehicles.)
Kentucky	26½u 30c	96	11½	ns	18,000	18,000	½	18,000	On 8-inch duals. (Solid tires prohibited, except for farm machinery and produce-hauling vehicles.) Full trailers prohibited.
Louisiana	33u 55c	96	12½	ns	7,000pl	7,000pl	2 1	21,000pl 14,000pl	Until Jan. 1, 1934. After Jan. 1, 1934.

¹ An abstract of State laws, including legislation passed in 1932. Figures for the District of Columbia are also included. Complete information, including changes which may be made subsequent to the publication of this table, may be obtained from the State authorities. It should be noted that many States exempt farm machinery and produce-hauling vehicles from the size and weight restrictions listed in this table; and that special permits may be issued for the movement of excess sizes and loads.
² In all cases gross weight includes motor unit (truck or tractor) plus trailer equipment indicated.
³ Varies with tire size. Axle load can not be greater than 14,820 pounds.
⁴ In mountains, 60 feet, elsewhere, 85 feet.
⁵ With power brakes on both rear axles; without power brakes, 36,000 pounds.
⁶ Tread width center to center. For-hire vehicles, 96 inches over all.
⁷ Motor carriers: Single unit, 35 feet; combination, 45 feet.
⁸ Effective Jan. 1, 1933. Tractor-semitrailer combination restricted to same over-all length as single unit (35 feet).
⁹ After Jan. 1, 1934, 45 feet.

Maximum limitations imposed by States on size and weight of motor vehicles on highways outside of incorporated areas, 1932—Con.

[ns—not specified; u—single unit; c—combination of units; s—solid tires; p—pneumatic tires; d—dual tires; pl—pay load; L—distance in feet between first and last axle, where weight is given by formula; trailer designations: ½—semitrailer only; 1—1 semitrailer or full trailer; 1½—1 semitrailer and 1 full trailer; 2—2 trailers, either type]

State	Over-all length	Over-all width	Over-all height	Gross weight on 1 axle	Gross weight of 4-wheel vehicle	Gross weight of 6-wheel vehicle	Maximum combination permitted and corresponding gross weight		Remarks
							Number of trailers	Gross weight of combination	
	Feet	Inches	Feet	Pounds	Pounds	Pounds		Pounds	
Maine	36u 62c	96	12½	13,500	20,000s 24,000p	27,000	1	27,000	Truck tractor, 4-wheel semi and 6-wheel full trailer, maximum gross 80,000 pounds. No combination including more than 1 semitrailer or full trailer may be operated at more than 10 miles per hour.
Maryland	ns	93	ns	ns	25,000	40,000	ns	ns	
Massachusetts	10 28u ns (c)	96s 102p	ns	ns	28,000s 30,000p	28,000s 30,000p	1	56,000s 60,000p	Axle and gross loads permitted vary with axle spacing, seasons, and road types.
Michigan	40u 60c	96	14	4,700-18,000			2		
Minnesota	35u 63c	96	12½	14,400s 18,000p	28,800s 36,000p	33,600s 42,000p	2½	ns	Truck tractor, 4-wheel semi and 6-wheel full trailer, maximum gross: Solids, 81,200 pounds; pneumatics 102,000 pounds.
Mississippi	33u 50c	96	12½	12,000	22,000	22,000	ns	30,000	Maximum pay load permitted, 7 tons.
Missouri	33u 40c	96	12½	16,000	24,000	24,000	1	48,000	
Montana	33u 60c	96	14½	11 16,800 and 13,000	24,000	34,000	1½	68,000	
Nebraska	35u 50c	96	12	16,000	16,000pl	16,000pl	1½	32,000pl	
Nevada	ns	96	ns	ns	25,000	38,000	ns	ns	Truck tractor, 4-wheel semi and 6-wheel full trailer, maximum gross, 76,000 pounds.
New Hampshire	30u 85c	96	ns	15,000	20,000	20,000	ns	ns	Truck tractor, 4-wheel semi and 6-wheel full trailer, maximum gross, 60,000 pounds.
New Jersey	33u 66c	96	12½	(12)	30,000	30,000	1	60,000	
New Mexico	33u 85c	96	14	18,000	600 (L+40)	600 (L+40)	1	600 (L+40)	Additional trailers by special permit.
New York	33u 65c	96s 106p	13	17,920s 22,400p	28,800s 36,000p	35,000s 44,000p	2	750 (L+40)	
North Carolina	33u 55c	90	12	ns	20,000	20,000	1½	60,000	
North Dakota	35u 70c	96	14½	16,000	32,000	48,000	1	64,000	
Ohio	35u 85c	96	12½	16,000s 18,000p	20,000s 24,000p	20,000s 24,000p	ns	ns	6-wheel truck and two 4-wheel full trailers, maximum gross: Solids, 60,000 pounds; pneumatics, 72,000 pounds.
Oklahoma	ns ns	90	ns	16,000	20,000	20,000	ns	ns	Truck tractor-semitrailer combination regarded as single vehicle; truck tractor, 4-wheel semi and 6-wheel full trailer, maximum gross, 40,000 pounds.
Oregon	34u 50c	96	11	16,000 14 17,000	600 (L+40)	600 (L+40)	ns	600 (L+40)	Solid tires not permitted except in municipalities or within 3 miles thereof.
Pennsylvania	33u 70c	96	14½	18,000	26,000	36,000	1½	65,000	
Rhode Island	85c	102	12½	22,400	28,000s 32,000p	40,000	2	120,000	
South Carolina	33u 50c	90	12½	15,000 and 10,000	25,000	25,000	ns	40,000	
South Dakota	50c	96	12½	16,000	20,000	20,000	1	40,000	
Tennessee	35u 45c	96	12	18,000	20,000	20,000	1½	60,000	
Texas	35u 45c	96	12½	ns	7,000pl	7,000pl	1	7,000pl	14,000 pounds pay load permitted when being transported to or from nearest common carrier loading point.
Utah	33u 85c	96	14	13,500s 18,000p	19,500s 26,000p	25,500s 34,000p	ns	45,000s 60,000p	
Vermont	ns	96	12	ns	16,000 20,000	16,000 20,000	1 1	16,000 20,000	Permitted on all highways. } Permits required in all cases for gross loads above 20,000 pounds. } Permitted on State-aid roads.
Virginia	33u 45c	96	12½	16,000	24,000	35,000	1	35,000	Combination including semi and full trailer, if registered prior to Mar. 26, 1932, may be operated until Apr. 1, 1934.
Washington	35u 85c	96	ns	12,000-18,500	24,000	34,000	1	60,000	
West Virginia	33u 85c	96	12	8,000-22,400s 16,000-22,400p	(18)	(18)	ns	(18)	
Wisconsin	33u 60c	96	ns	19,000 12,000	24,000 15,000	36,000 22,500	1½ 1½	96,000 60,000	Class A highways. } Solid tires prohibited after July 1, 1934. } Permits required on all gross weights exceeding 30,000 pounds.
Wyoming	40u 85c	96	12½	18,000	30,000	30,000	ns	30,000	
District of Columbia	33u 85c	96	12½	19 22,400s 19 24,640p	28,000s 30,800p	36,000s 39,600p	ns	ns	Truck tractor, 4-wheel semi and 6-wheel full trailer, maximum gross: Solids, 72,000 pounds; pneumatics, 79,200 pounds. New registration of solid tired vehicles under special permit only.

¹⁰ 33 feet on principal routes, as designated by Department of Public Works; tractor-semitrailer, 40 feet.

¹¹ Varies with number of axles: 2 axles, 16,800 pounds; more than 2 axles, 13,000 pounds.

¹² Varies with tire equipment.

¹³ Effective Jan. 1, 1933.

¹⁴ On paved highways.

¹⁵ Varies with number of axles: 2 axles or less, 15,000 pounds; more than 2 axles, 10,000 pounds.

¹⁶ Exclusive of coupling.

¹⁷ Varies with number and spacing of axles.

¹⁸ Gross load determined by capacity of bridges by following formulas: H-20 design, gross load=1,330 (L+40); H-15 design, gross load=1,000 (L+40); H-10 design, gross load=670 (L+40).

¹⁹ Limited to 14,000s and 15,400p for vehicles with 6 or more wheels, a tractor and semitrailer combination being considered as a single vehicle as regards weight limitations only.

²⁰ Tractor and semitrailer combination is considered as a single vehicle of 6 or more wheels as regards weight limitations only.

ROAD PUBLICATIONS of the BUREAU OF PUBLIC ROADS

Any of the following publications may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C. As his office is not connected with the department and as the department does not sell publications, please send no remittance to the United States Department of Agriculture.

ANNUAL REPORTS

- Report of the Chief of the Bureau of Public Roads, 1924.
5 cents.
- Report of the Chief of the Bureau of Public Roads, 1925.
5 cents.
- Report of the Chief of the Bureau of Public Roads, 1926.
5 cents.
- Report of the Chief of the Bureau of Public Roads, 1927.
5 cents.
- Report of the Chief of the Bureau of Public Roads, 1928.
5 cents.
- Report of the Chief of the Bureau of Public Roads, 1929.
10 cents.
- Report of the Chief of the Bureau of Public Roads, 1930.
10 cents.
- Report of the Chief of the Bureau of Public Roads, 1931.
10 cents.

DEPARTMENT BULLETINS

- No. 136D . . Highway Bonds. 20 cents.
- No. 347D . . Methods for the Determination of the Physical Properties of Road-Building Rock. 10 cents.
- No. 532D . . The Expansion and Contraction of Concrete and Concrete Roads. 10 cents.
- No. 583D . . Reports on Experimental Convict Road Camp, Fulton County, Ga. 25 cents.
- No. 660D . . Highway Cost Keeping. 10 cents.
- No. 1279D . . Rural Highway Mileage, Income, and Expenditures, 1921 and 1922. 15 cents.
- No. 1486D . . Highway Bridge Location. 15 cents.

TECHNICAL BULLETINS

- No. 55T . . Highway Bridge Surveys. 20 cents.
- No. 265T . . Electrical Equipment on Movable Bridges. 35 cents.

MISCELLANEOUS CIRCULARS

- No. 62MC . . Standards Governing Plans, Specifications, Contract Forms, and Estimates for Federal-Aid Highway Projects. 5 cents.
- No. 93MC . . Direct Production Costs of Broken Stone. 25 cents.
- No. 109MC . . Federal Legislation and Regulations Relating to the Improvement of Federal-Aid Roads and National-Forest Roads and Trails, Flood Relief, and Miscellaneous Matters. 10 cents.

MISCELLANEOUS PUBLICATION

- No. 76MP . . The results of Physical Tests of Road-Building Rock. 25 cents.

REPRINT FROM PUBLIC ROADS

- Reports on Subgrade Soil Studies. 40 cents.

Single copies of the following publications may be obtained from the Bureau of Public Roads upon request. They can not be purchased from the Superintendent of Documents.

SEPARATE REPRINT FROM THE YEARBOOK

- No. 1036Y . . Road Work on Farm Outlets Needs Skill and Right Equipment.

TRANSPORTATION SURVEY REPORTS

- Report of a Survey of Transportation on the State Highway System of Ohio. (1927.)
- Report of a Survey of Transportation on the State Highways of Vermont. (1927.)
- Report of a Survey of Transportation on the State Highways of New Hampshire. (1927.)
- Report of a Plan of Highway Improvement in the Regional Area of Cleveland, Ohio. (1928.)
- Report of a Survey of Transportation on the State Highways of Pennsylvania. (1928.)
- Report of a Survey of Traffic on the Federal-Aid Highway Systems of Eleven Western States. (1930.)

A complete list of the publications of the Bureau of Public Roads, classified according to subject and including the more important articles in PUBLIC ROADS was printed in PUBLIC ROADS, vol. 13, No. 3, May 1932. Copies of this list may be obtained upon request addressed to the U. S. Bureau of Public Roads, Willard Building, Washington, D. C.



UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS

CURRENT STATUS OF FEDERAL-AID ROAD CONSTRUCTION

AS OF
NOVEMBER 30, 1932

STATE	COMPLETED MILEAGE			UNDER CONSTRUCTION				APPROVED FOR CONSTRUCTION				MILEAGE			BALANCE OF FUNDS AVAILABLE FOR NEW PROJECTS	STATE
	Federal aid allotted	Estimated total cost	Percentage completed	MILEAGE		Federal aid allotted	Estimated total cost	MILEAGE		Federal aid allotted	Estimated total cost	Initial	Stage ¹	Total		
				Initial	Total			Initial	Total							
Alabama	2,368.7	\$ 4,255,833.74	45	161.5	183.8	\$ 2,091,020.77	1,316,725.83	25.2	27.9	684,362.89	1,316,725.83	25.2	27.9	52.9	Alabama	
Arizona	1,805.3	3,476,642.04	77	114.5	242.4	1,958,233.71	351,160.88	24.7	46.6	70,232.17	351,160.88	24.7	46.6	46.6	Arizona	
Arkansas	1,957.9	2,815,622.27	76	73.8	112.2	1,304,878.41	822,908.45	23.3	23.3	411,454.18	822,908.45	23.3	23.3	23.3	Arkansas	
California	2,448.2	7,598,702.42	69	155.0	201.2	2,805,910.77	2,154,374.90	37.3	38.3	203,356.98	2,154,374.90	37.3	38.3	38.3	California	
Colorado	1,708.6	2,897,618.36	75	126.6	165.2	1,404,318.24	628,451.48	56.2	56.2	282,807.62	628,451.48	56.2	56.2	56.2	Colorado	
Connecticut	1,289.8	4,291,246.27	66	35.3	35.3	1,638,337.97	223,488.92	6.2	6.2	111,744.45	223,488.92	6.2	6.2	6.2	Connecticut	
Delaware	383.3	336,916.35	62	10.5	14.4	83,647.50	235,600.00	14.8	14.8	46,000.00	235,600.00	14.8	14.8	24.1	Delaware	
Florida	660.2	5,003,601.52	55	131.0	131.0	2,364,040.75	602,870.65	298.0	298.0	301,435.30	602,870.65	298.0	298.0	17.8	Florida	
Georgia	3,181.8	6,305,127.53	67	150.2	147.8	2,537,438.17	886,932.32	55.5	21.8	319,861.98	886,932.32	55.5	21.8	77.3	Georgia	
Idaho	1,432.5	2,290,147.14	91	112.8	207.6	1,144,271.69	1,111,604.70	207.6	207.6	290,292.61	1,111,604.70	207.6	207.6	68.1	Idaho	
Illinois	3,020.3	21,131,126.14	80	650.3	692.2	8,568,574.00	1,911,600.89	72.2	72.2	485,471.35	1,911,600.89	72.2	72.2	68.1	Illinois	
Indiana	1,962.4	8,878,376.01	91	327.6	330.6	4,334,652.70	906,878.08	48.3	48.3	90,100.00	906,878.08	48.3	48.3	48.3	Indiana	
Iowa	3,436.9	7,084,249.92	90	322.2	365.6	1,721,241.21	1,228,224.42	6.9	5.2	16,850.00	1,228,224.42	6.9	5.2	12.1	Iowa	
Kansas	3,754.8	4,374,747.45	65	262.2	372.2	2,120,114.15	2,158,639.62	131.4	17.9	332,288.39	2,158,639.62	131.4	17.9	17.9	Kansas	
Kentucky	1,842.3	5,059,193.80	50	228.5	355.8	1,877,219.57	528,952.24	26.1	14.9	160,270.00	528,952.24	26.1	14.9	41.0	Kentucky	
Louisiana	1,609.9	6,470,517.64	60	53.4	82.1	2,833,280.42	1,074,100.10	8.4	8.4	499,869.51	1,074,100.10	8.4	8.4	8.4	Louisiana	
Maine	79.9	1,540,289.58	87	21.6	21.6	832,960.44	656,319.14	21.6	21.6	141,601.01	656,319.14	21.6	21.6	21.6	Maine	
Maryland	813.9	1,298,028.30	85	30.0	30.0	582,192.68	654,459.55	28.5	1.5	342,268.73	654,459.55	28.5	1.5	28.5	Maryland	
Massachusetts	856.8	4,993,936.42	73	53.9	58.9	1,698,921.87	590,120.53	58.9	10.0	80,000.00	590,120.53	58.9	10.0	10.0	Massachusetts	
Michigan	2,237.3	7,634,204.37	79	310.2	384.9	3,288,010.00	964,402.50	82.7	94.4	339,402.50	964,402.50	82.7	94.4	94.4	Michigan	
Minnesota	4,220.7	6,587,773.02	97	157.2	216.7	814,130.67	237,800.71	37.9	13.4	200.00	237,800.71	37.9	13.4	13.4	Minnesota	
Mississippi	1,400.3	4,710,041.98	70	189.8	243.7	2,315,393.26	709,939.63	29.7	6.4	354,919.77	709,939.63	29.7	6.4	36.1	Mississippi	
Missouri	3,109.3	4,044,679.12	70	212.8	262.4	2,712,393.26	1,007,000.00	61.4	148.7	374,932.42	1,007,000.00	61.4	148.7	240.8	Missouri	
Montana	2,724.1	5,294,429.32	70	410.7	617.4	2,934,877.52	2,562,104.58	192.1	192.1	1,438,012.85	2,562,104.58	192.1	192.1	192.1	Montana	
Nebraska	4,260.3	4,845,021.26	45	140.4	274.8	2,314,923.79	840,233.33	16.5	21.7	407,306.14	840,233.33	16.5	21.7	34.2	Nebraska	
Nevada	1,347.1	1,943,571.62	83	29.7	144.7	920,884.95	382,911.03	144.7	34.4	20,582.33	382,911.03	144.7	34.4	34.4	Nevada	
New Hampshire	427.1	833,618.11	79	27.6	31.1	369,739.95	462,877.16	31.1	33.3	50,542.33	462,877.16	31.1	33.3	33.3	New Hampshire	
New Jersey	653.6	7,680,170.17	58	68.0	68.5	2,670,839.30	178,205.74	68.5	1.5	79,176.08	178,205.74	68.5	1.5	1.5	New Jersey	
New Mexico	2,253.0	2,252,910.00	57	136.6	152.2	1,167,452.00	1,167,452.00	152.2	34.4	313,247.34	1,167,452.00	152.2	34.4	34.4	New Mexico	
New York	3,559.0	20,426,910.00	59	552.5	558.7	6,685,195.00	1,449,460.00	558.7	37.3	241,520.00	1,449,460.00	558.7	37.3	37.3	New York	
North Carolina	2,255.2	1,994,711.83	39	201.7	222.6	978,894.78	1,937,269.00	222.6	4.4	22,618.94	1,937,269.00	222.6	4.4	266.7	North Carolina	
North Dakota	2,910.2	5,132,640.92	67	144.7	192.0	1,644,938.72	760,619.70	87.3	249.5	34,200.00	760,619.70	87.3	249.5	312.2	North Dakota	
Ohio	2,910.2	9,912,781.34	84	232.5	331.0	3,148,811.45	3,294,422.20	98.5	1.3	655,698.68	3,294,422.20	98.5	1.3	41.5	Ohio	
Oklahoma	2,275.1	4,004,922.44	76	210.3	248.0	1,981,935.01	986,253.16	248.0	73.4	288,947.65	986,253.16	248.0	73.4	73.4	Oklahoma	
Oregon	1,125.1	1,180,458.90	67	64.4	119.2	3,184,938.90	1,189,880.82	119.2	94.9	503,772.31	1,189,880.82	119.2	94.9	109.1	Oregon	
Pennsylvania	3,145.1	6,282,860.11	67	320.3	360.3	3,184,938.90	4,168,953.57	360.3	14.1	503,586.92	4,168,953.57	360.3	14.1	151.8	Pennsylvania	
Rhode Island	263.8	1,146,278.45	47	179.6	257.7	431,112.44	161,649.03	257.7	3.6	20,000.00	161,649.03	257.7	3.6	3.6	Rhode Island	
South Carolina	1,990.4	3,236,640.92	53	219.4	292.0	1,270,692.73	102,258.53	292.0	4.9	34,200.00	102,258.53	292.0	4.9	4.9	South Carolina	
South Dakota	3,974.4	5,190,976.59	76	434.6	496.5	2,402,618.68	66,290.85	496.5	9.9	32,446.02	66,290.85	496.5	9.9	9.9	South Dakota	
Tennessee	1,697.8	4,066,434.89	26	128.9	170.9	2,002,920.23	570,141.83	170.9	7.5	264,350.06	570,141.83	170.9	7.5	29.2	Tennessee	
Texas	7,744.4	15,624,834.52	66	726.4	1,128.5	6,853,093.63	6,228,284.99	1,128.5	168.7	1,924,478.99	6,228,284.99	1,128.5	168.7	467.4	Texas	
Utah	1,211.3	1,939,247.56	86	102.2	169.4	861,660.00	689,488.14	169.4	28.0	190,162.40	689,488.14	169.4	28.0	60.1	Utah	
Vermont	364.7	836,650.25	84	37.4	37.4	309,246.92	187,263.63	37.4	8.7	22,618.94	187,263.63	37.4	8.7	8.7	Vermont	
Virginia	1,934.5	3,548,128.72	58	194.8	221.2	1,693,117.59	1,489,595.32	221.2	21.8	429,597.24	1,489,595.32	221.2	21.8	62.3	Virginia	
Washington	1,294.5	2,530,944.20	69	96.8	103.1	982,812.10	845,696.86	103.1	33.7	279,000.00	845,696.86	103.1	33.7	33.7	Washington	
West Virginia	913.0	3,315,196.60	54	112.4	120.8	1,282,638.44	386,314.21	120.8	12.7	108,642.30	386,314.21	120.8	12.7	12.7	West Virginia	
Wisconsin	2,086.0	1,964,455.17	51	188.8	305.8	1,364,455.17	687,882.86	305.8	3.6	42,100.00	687,882.86	305.8	3.6	24.5	Wisconsin	
Wyoming	2,086.0	1,964,455.17	51	188.8	305.8	1,364,455.17	687,882.86	305.8	11.3	5,409.11	687,882.86	305.8	11.3	11.3	Wyoming	
Hawaii	78.4	2,013,831.20	33	23.4	25.4	1,108,393.10	258,731.81	25.4	1.5	314,507.62	258,731.81	1.5	1.5	1.5	Hawaii	
TOTALS	103,873.6	250,723,571.82	58	9,152.4	3,825.6	101,098,446.94	51,976,408.39	2,249.1	978.4	15,618,731.70	51,976,408.39	2,249.1	978.4	3,227.5	TOTALS	

Construction completed 157,635,000.00
Balance uncompleted 93,088,000.00

¹The term "under construction" refers to additional work done on projects previously completed with Federal aid. In general, such additional work consists of the construction of a surface of higher type than was provided in the initial improvement.

